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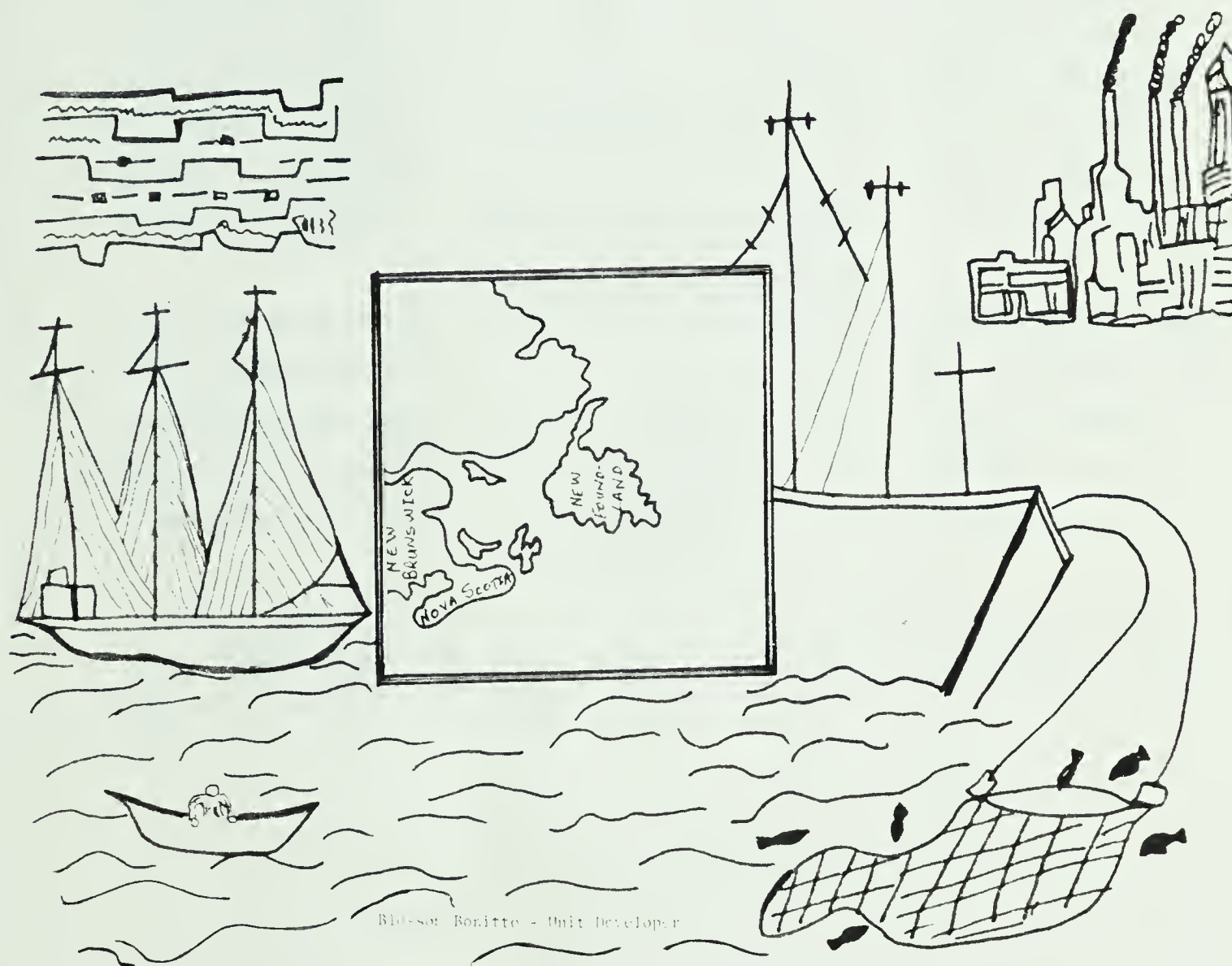
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HAS TECHNOLOGICAL CHANGE IN CANADIAN INDUSTRY BEEN A BOON OR A DISASTER? A CASE STUDY OF FISHING.



Blosser Bonitto - Unit Developer

GRADE 9

PEOPLE AND THEIR TECHNOLOGY

TOPIC C

INDUSTRIALIZATION IN CANADA

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PREFACE

This Teaching Unit has been prepared as part of a project to ensure that all topics prescribed in the 1981 Alberta Social Studies Curriculum are accompanied by high quality instructional units for use by Alberta teachers. The project in question attempts to build on the experiences of the Phase One Teaching Units Project and Kanata Kits Project, but differs from the preceding projects in two important respects. First, greater involvement was obtained in the developmental stage of the project from practising teachers. Second, pilot teachers were given more responsibility to assist with the processes of revision and refinement.

Like the instructional materials prepared under the previous project, this Teaching Unit is not prescriptive or mandatory. It attempts to illustrate one way in which the Alberta "process of social inquiry" can be structured, and teachers must judge which, if any, of the strategies outlined are helpful to them in their own planning.

To the persons who assisted with the development of this unit and whose names appear on the following pages, Alberta Education extends appreciation and sincere thanks.

F.A. Crowther
Associate Director of Curriculum
(Social Studies)

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SAMPLES OF STUDENT WORK: Grade 9 students from Calgary schools

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AMAX of Canada Limited. A Perspective on Mill Tailing Disposal at Kitsault, British Columbia, January 1981.

"The Big Catch" from Canada and the World. Maclean Hunter Ltd., May 1979.

Castner, Henry W. et al. Thinking About Ontario: A Hosford Study Atlas. Toronto and Edmonton: Hosford Publishing Ltd., 1981 for Graph p. 106.

CN Rail for photograph "Pouch Cove, Newfoundland, in the twentieth century" from Canada: A Visual History by D.G.G. Kerr and R.I.K. Davidson. Toronto: Thomas Nelson and Sons (Canada) Limited, 1966.

Doughty, Howard A. "The Myth of the Whale: A Problem of Technology" from Canadian Studies: Self and Society by Ian Munro et al. Rexdale, Ontario: John Wiley and Sons Canada Limited, 1975, p. 173.

Dyson, John. "Tangled Nets Off Newfoundland" from Reader's Digest, May 1982, pp. 76 - 81.

English, Robert. "Lobster in summer, cod in the fall, 'stamps' in winter" from The Financial Post, August 2, 1980, p. S9.

Frank, Charles. "This farmer's business is slippery" from The Calgary Herald, June 15, 1981, p. B11.

- Gourley, Catherine. "Fishing industry nets a harvest of problems" from The Financial Post, August 30, 1980, p. 8.
- Hames, Jerry. "Surprise support at Amax meeting" from Canadian Churchman, Vol. 107, No. 6, June 1981, p. 1.
- Hatt, Mary Stackhouse. "Operating a fish farm brings entrepreneur success on a plate" from The Financial Post, September 15, 1979.
- Hopkins, Thomas. "Echoes from the boom heard across the Pacific" from Macleans's, March 17, 1980.
- Hunt, Geoff. "Fish story (to be continued)" from Maclean's, September 1, 1980.
- Iverson, N. and R.D. Matthews. Communities in Decline. St. John's, Newfoundland: Institute of Social and Economic Research, Memorial University of Newfoundland, 1968.
- McQuaig, Linda and Rod Mickleburgh. "Toxic Sludge in Davey Jones's Locker", Maclean's, March 30, 1981, pp. 45-46.
- Mowat, Farley and John de Visser. Excerpt from "The Heritage" from This Rock Within the Sea: A Heritage Lost. Toronto: McClelland and Stewart, 1968.
- Munro, Margaret. "Rules made to be broken, says fisheries minister", Calgary Herald, April 2, 1982, p. A14.
- Public Archives of Canada, Ottawa for photograph "The Newfoundland cod fishery, as depicted by Herman Moll about 1713" from Canada: A Visual History by D.G.G. Kerr and R.I.K. Davidson. Toronto: Thomas Nelson and Sons (Canada) Limited, 1966.
- Rogers, Stan. Words of Make and Break Harbour. Fogarty's Cove Music and Red Beaver Music.
- Thompson, David. "Space-Age Fishing", Outdoor Canada, March/April 1979, pp.52-59.
- Wadden, Nix. "Widening the net", Canada and the World, May 1977, pp. 18-19.
- Zierler, Amy and Catherine Gourley. "Fishermen net more cash and catches", The Financial Post, January 5, 1980.

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UNIT GOALS

This unit attempts to broaden students' perspectives on industrialization processes as they affect Canada and Canadians. In the unit, students deal with the issue: "Has technological change in Canadian industry been a boon or a disaster?" by examining the impact of technology upon the fishing industry. From this case study it is expected that students will develop inquiry skills that will enable them to understand significant trends in technological development in other parts of Canada. The unit has a strong geographic component which should lead to increased sensitivities towards, and understandings of, the nature of the Canadian environment.

UNIT OBJECTIVES

A. Value Objectives

Upon completion of this unit, the students will be able to:

1.
 - identify the different value positions concerning technological development held by members of a fishing community with conflicting interests
 - appreciate conflicting value positions held by members of an industrial society
2.
 - deduce a value position, through moral reasoning, and test it against other value positions
 - support a value position with valid factual evidence
 - recognize that different value positions may be supported by equally valid factual evidence
 - tentatively adopt a value position in a given situation while demonstrating a willingness to modify the position in light of new evidence
3.
 - demonstrate a concern for others by being willing to consider the positive and negative consequences that technological developments in the fishing industry have upon individuals and their environment
 - tolerate ambiguity resulting from the inability to completely reconcile conflicting value positions

B. Knowledge Objectives

Upon completion of this unit, the students will be able to:

1. arrive at the following generalization: when industry introduces new technology, conflict often arises among individuals and groups within the society
2. understand and apply effectively the following concepts: materialism, conservation, technological change, primary, secondary and service industries
3.
 - identify the three levels of industry and explain their inter-relationships
 - identify and provide examples of new technologies related to the fishing industry
 - explain the impact of technological change upon people who are directly affected by the fishing industry
 - analyze those processes of industrialization in Canada that, related to the fishing industry, help foster co-operation or conflict
 - explain how advances in technology contribute to increased contact and interaction between different regions in Canada
 - illustrate how developments in the fishing industry influence issues of national identity and unity
 - predict how the Canadian fishing industry will be affected by future technological developments

C. Skill Objectives

Upon completion of this unit, the students will be able to:

1. Inquiry Skills

- I identify and focus on an issue dealing with the introduction of new technology into industry, and its impact on Canadians and the environment
- II formulate research questions by discussing how the effects of new technology on quality of life can be determined
- III gather and organize data by reading and interpreting maps (of different projections and scales) which relate the location and development of industries in the Atlantic and Pacific regions of Canada
- IV evaluate data by isolating bias and/or emotionalism from at least two different viewpoints about controlling the introduction of new technology
- V synthesize data by formulating generalizations to relate the introduction of new technology in industry to broad goals of Canadian society
- VI resolve the issue by predicting the consequences for Canada's future of encouraging or discouraging specific technological advances in industry
- VII apply the decision by creating a plan to assess the predicted impact of a technological change on the fishing industry
- VIII evaluate the application of the plan in terms of consistency between predictions and actual impact of new technology

2. Participation Skills

- communicate effectively by helping to prepare and deliver a group position paper in response to the issue for inquiry
- interpret the ideas and feelings of those who would be affected by a specific technological change in the Canadian fishing industry
- participate in group decision-making by assuming a specific role (e.g. leader, recorder, summarizer, Devil's Advocate) in preparing a group report
- demonstrate a "sense of community" by sharing points about using technology to improve the quality of life in Canada

EVALUATION

There are many opportunities in this unit to evaluate students' work. Specific types of evaluation are left to the discretion of the classroom teacher. Certainly, there are opportunities for student quizzes, both multiple choice and short answer.

Some of the assignments from the activities could be collected and evaluated. For example, the position paper outlined in Activity 21 could be used for evaluation purposes, and each of the creative exercises in Activity 22 could be evaluated, not only by the teacher but by students as well.

RESOURCES

Prescribed and recommended resources are available from the Alberta School Book Branch.

PRESCRIBED RESOURCES:

Botting, Dwight, Dennis Gerrard and Ken Osborne. The Technology Connection: The Impact of Technology on Canada. Vancouver: CommCept Publishing Ltd., 1980.

Hannell, Christine and Robert Harshman. Across Canada: Resources and Regions. Toronto: Wiley Publishers of Canada Limited, 1980

NOTE:

At least one new prescribed learning resource for Topic 9C will be available in Spring, 1983. Materials presently in publication are expected to address Topic 9C objectives very directly.

Teachers may wish to review these materials before making purchases that have long term implications.

RECOMMENDED RESOURCES:

Tomkins, Doreen Margaret et al. Canada: The Land and Its People. Toronto: Gage Educational Publishing Limited, 1975.

OPTIONAL RESOURCES:

The following items were previewed and found acceptable for use in this unit. If you have them in your school, or have access to them, they would be useful to either individuals, groups or the entire class.

A. Print Resources

Anderson, Allan. Salt Water, Fresh Water. Toronto: Macmillan of Canada, 1979.

Over a hundred Canadians who work on the water - fishermen, guides, pilots, divers, rum-runners, whalers, tugboat skippers - pass along their vivid stories of life afloat - past and present.

Harper, Peter. Salmon Fishing in British Columbia. Scarborough: Ginn and Company, 1969.

Marsh, James H. The Fishermen of Lunenburg. Toronto: Holt, Rinehart and Winston of Canada Ltd., 1968.

McDevitt, Daniel et al. Canada Today. Toronto: Prentice-Hall Canada, Inc., 1979.

A general text on Canada that is prescribed for grade 10.

Molyneaux, John and Eric Jones. Canada: Profile of a Nation. Scarborough: McGraw-Hill Ryerson Limited, 1974.

A geography text that uses concepts to investigate regions of Canada.

Vass, Ben et al. Countdown Canada. Toronto: Macmillan of Canada, 1977.

A conceptual geography text of Canada.

Wiley, William et al. Canada: This Land of Ours. Scarborough: Ginn and Company, 1970.

Fishing grounds, working conditions, equipment.

B. Non-print Resources

1. Fishing

The Atlantic Region: from the Sea (filmstrip). National Film Board of Canada, no date.

50 frames, colour. With captions and manual. Contents: History of fishing industry, fishing resources, fishing villages, lobsters, cod, herring, fishing vessels, processing of fish.

British Columbia: Fishing (filmstrip). National Film Board, 1968.

45 frames, colour. Captions with manual. Contents: Market value, types of fish caught, gill netting, trolling, purse seining, longlining, trawling, processing, conservation, life cycle of the Pacific salmon.

Brothers Byrne (film). National Film Board, 1975.

A 22 minute film that follows two Newfoundland brothers as they return to their small fishing village. Both are very successful in St. John's and they comment on their former home.

Capelin Fishing in Atlantic Canada (film). National Film Board, 1974.

This 15 minute film explains the old method of fishing as well as the new. It shows how new technologies work and their effects on the fisheries.

Change in the Maritimes (film). National Film Board, 1966.

A 15 minute film that discusses problems in the Atlantic region. Solutions to the problems are presented and an old time resident reacts to them.

Trawler Fishermen (film). National Film Board, 1966.

This 22 minute film is narrated by a fisherman and follows the operation of a trawler from putting out to sea to the fish packing plant. We also hear the comments of the fisherman.

2. Industry

Alberta: Resources In Review (videotape). ACCESS Alberta, 1978.
#216501.

Distributed by "Dubbing Centre", ACCESS Media Resource Centre, Health Sciences Centre, 3350 Hospital Drive N.W., Calgary, Alberta, T2N 4N1.

28 minutes, sound and colour. Shows some of Alberta's valuable assets, their current use and future potential. Using maps, graphs, and on location reports the program will stimulate thoughts on how these resources should be managed.

Canada's Resource Industries: A Study in Diversity (filmstrip).
Prentice-Hall Media, 1980.

Five filmstrips and cassettes on agriculture, fishing, forestry, mining, and energy present a straightforward look at these industries.

Canadian Industry (filmstrip). (Canada: Northern Giant series.) BFA
Education Media, 1969.

Distributed by Holt, Rinehart and Winston, 55 Horner Avenue, Toronto, Ontario, M8Z 4X6.

81 frames, colour and sound.

Industry (filmstrip). (Canada: Land of New Wealth series.) Encyclopedia
Britannica, 1976.

Distributed by Visual Education Centre, 75 Horner Avenue, Toronto, Ontario, M8Z 4X5

9 minutes, colour and sound. Provides a history of industrialization in Canada and a look at the problems and potential of various primary and secondary industries.

Mineral Resources and Manufacture (filmstrip). (series Canada - Part 2.)
Hugh Baddeley Productions, 1974.

Distributed by Carman Educational Associates, 8074A Islington Avenue, Woodbridge, Ontario, L4L 1W5.

88 frames, colour and no sound.

Deep Sea Fishing (filmstrip). National Film Board of Canada, 1965.

31 frames, colour. With captions and manual. Contents: Detailed account of the mechanized deep sea method of fishing called otter-trawling. Illustrates overall importance of the region's fisheries.

The Fishermen of Nova Scotia (filmstrip). Society for Visual Education (SVE), 1973.

86 frames, colour. Cassette and manual. Contents: The province, coast, fishing towns, boat building, fish packers, fisherman's co-op, family life, lobster fishing, social life, foreign trawler.

Fishing Town (filmstrip). National Film Board, 1968.

49 frames, colour. With captions and manual. Contents: Port Bickerton, Nova Scotia has become a prosperous fishing village as a result of year round fishing, large fishing boats, modern transportation and a modern filleting and processing factory.

Fogarty's Cove (record). By Stan Rogers. FCM P/1001.

Distributed by Almada Corporation, 380 rue St. Antoine Ouest, Montreal, Quebec. H2Y 1J9.

A collection of folk songs including "Make and Break Harbour". There are other songs relating to the sea.

Lobster Fishing (filmstrip). National Film Board, no date.

28 frames, black and white. With captions and manual. Contents: Fishing area in Atlantic Provinces, lobster traps, catch, preparation for market and canning.

Salmon (kit). Vancouver, British Columbia: B.C. Teachers' Federation, no date.

1 salmon game, 10 slides, 1 Legend of the Salmon, 8 sheets of drawings and maps, 1 Materials on Sockeye Salmon Run booklet.

The Story of the Atlantic Salmon (filmstrip). National Film Board, no date.

35 frames, colour. With captions and manual. Content: Life cycle of the salmon, science oriented.

Tomorrow is Too Late (film). National Film Board, 1974.

29 minutes. Problems in the Canadian fisheries are outlined. Attempts to solve them are presented. There is also a look into the future of the fisheries.

Natural Resources (filmstrip). (Canada: Land of New Wealth series.)
Encyclopedia Britannica, 1976.

11 minutes, colour and sound. Looks at Canada's natural resources and the industries such as tourism, mining, smelting and lumbering that depend on those resources.

Pinawa, Manitoba: Suburb For Atomic Energy (filmstrip). (Documentary on Canada series.) Society For Visual Education (SVE), 1973.

Distributed by Moyer Vico, 25 Milvan Drive, Weston, Ontario, M9L 1Z1.

19 minutes, sound and colour. Documents the development and resulting attitudes and activities of a planned community located in a sparsely part of Manitoba. Discusses how and why Canada is using atomic power and shows the operation of an atomic reactor.

Resources, Agriculture and Industry (filmstrip). (Canada: A Regional Study series.) Eye Gate House, 1972.

Distributed by National Scientific Products, 2200 South Sheridan Way Mississauga, Ontario, L5J 2M5.

39 frames, sound and colour.

Seeing Canada's West and North: Industry and Commerce (filmstrip). Coronet, 1973.

Distributed by Coronet Instructional Media, 200 Steelcase Road East, Markham, Ontario, L3R 1G2.

14 minutes, colour and sound.

Urban Economy (filmstrip). (Urbanism in Canada series.) R. B. Mansour, 1974.

Distributed by ETOS, 2250 Midland Avenue, Unit #9, Scarborough, Ontario, M1P 4R9.

9 minutes, colour and sound. Focus on the basic economic of a urban community. Photos illustrate resource manufacturing, services and administrative levels of the Canadian economy.

NOTE TO TEACHERS

The topic "Industrialization in Canada" is so vast that it was decided to investigate it using a case study approach. It was felt by the developers that this would permit students to examine some of the most significant issues about industrialization while permitting some generalization to the larger Canadian context.

The fishing industry was selected as the case study for a number of reasons. First, it illustrates clearly both positive and negative impacts of technology; second, it is an area where there is controversy over government involvement and control; third, other industries such as agriculture, petroleum or lumber have probably been dealt with in earlier grades.

"Fishing in the Maritimes" may nevertheless seem an unusual choice for case study analysis, but as you and your students become immersed in the unit, you will see that it has excellent potential to enrich students' understandings of their total Canadian culture and environment. Certainly, throughout the unit, comparison can be made between fishing and other industries in Canada. Finally if you should wish to use another industry as your focus, perhaps this unit could be a model from which to proceed in your instructional planning. Good luck!

The Calgary Development Team

FLOW CHART

AREA OF INQUIRY AND ACTIVITIES	TIME (minutes)	RESOURCES	FOCUS OF INQUIRY
<p>I IDENTIFY AND FOCUS ON THE ISSUE</p> <p>1. Make and Break Harbour</p> <p>2. Jigging With Jargon</p>	<p>80</p> <p>40</p>	<p>"Make and Break Harbour", SR 1</p> <p>Jigging With Jargon Quiz, SR 2, pp.1-4 and Answer Key</p>	<p>What have been the results of changes in technology?</p> <p>What do I know about the fishing industry?</p>
<p>II ESTABLISH RESEARCH QUESTIONS AND PROCEDURES</p> <p>3. Where Do We Go From Here?</p> <p>4. Change in the Maritimes</p>	<p>40</p> <p>40</p>	<p>Unit Activity Checklist, SR 3</p> <p>Film - "Change in the Maritimes" (NFB)</p> <p>"Change in the Maritimes" Questions, SR 4</p> <p>Change on the Coast of Newfoundland, TR 1, pp.1-3</p> <p>"Tack's Beach", TR 2</p>	<p>What is involved in this study?</p> <p>How is lifestyle affected by attitudes toward materialism and changes in technology?</p>
<p>III GATHER AND ORGANIZE DATA</p> <p>5. Relationships in a Region</p>	<p>180</p>	<p>Relationships in a Region, SR 5</p> <p>-An atlas of Canada</p> <p>-Canada: The Land and Its People</p> <p>-Outline Map of Canada, SR 6</p> <p>Retrieval Chart, SR 7</p>	<p>How are industries in Canada related to natural resources?</p>

AREA OF INQUIRY AND ACTIVITIES	TIME (minutes)	RESOURCES	FOCUS OF INQUIRY
6. Location of the Canadian Fisheries	80	Atlantic Shapes, SR 8 Atlantic Provinces Map, SR 9 An atlas of Canada <u>Across Canada: Resources and Regions</u> <u>Canada: The Land and Its People</u> <u>British Columbia Map, SR 10</u>	Where is the fishing industry located?
7. Characteristics of Areas For Good Fishing	80	Characteristics of Areas For Good Fishing, SR 11 <u>Across Canada: Resources and Regions</u> A student atlas	What determines the location of the fishing industry?
8. Review of Types of Industry	40	<u>Across Canada: Resources and Regions</u> <u>The Technology Connection: The Impact of Technology</u> <u>On Canada</u> <u>Canada Year Book Graph, SR 12</u>	What are the types of industries and how important are they?
9. Historical Aspects of the Fishing Industry	40	John Cabot's Voyages, SR 13 Fishing Industry Time Line, SR 14	What were early reactions to Atlantic coast fish resources?
10. Fishing From the Schooner Dory	80	<u>The Technology Connection: The Impact of Technology</u> <u>On Canada</u> <u>Sequential Outline: Fishing From the Schooner Dory, SR 15 and Answer Key</u>	What technology was used in schooner dory fishing?

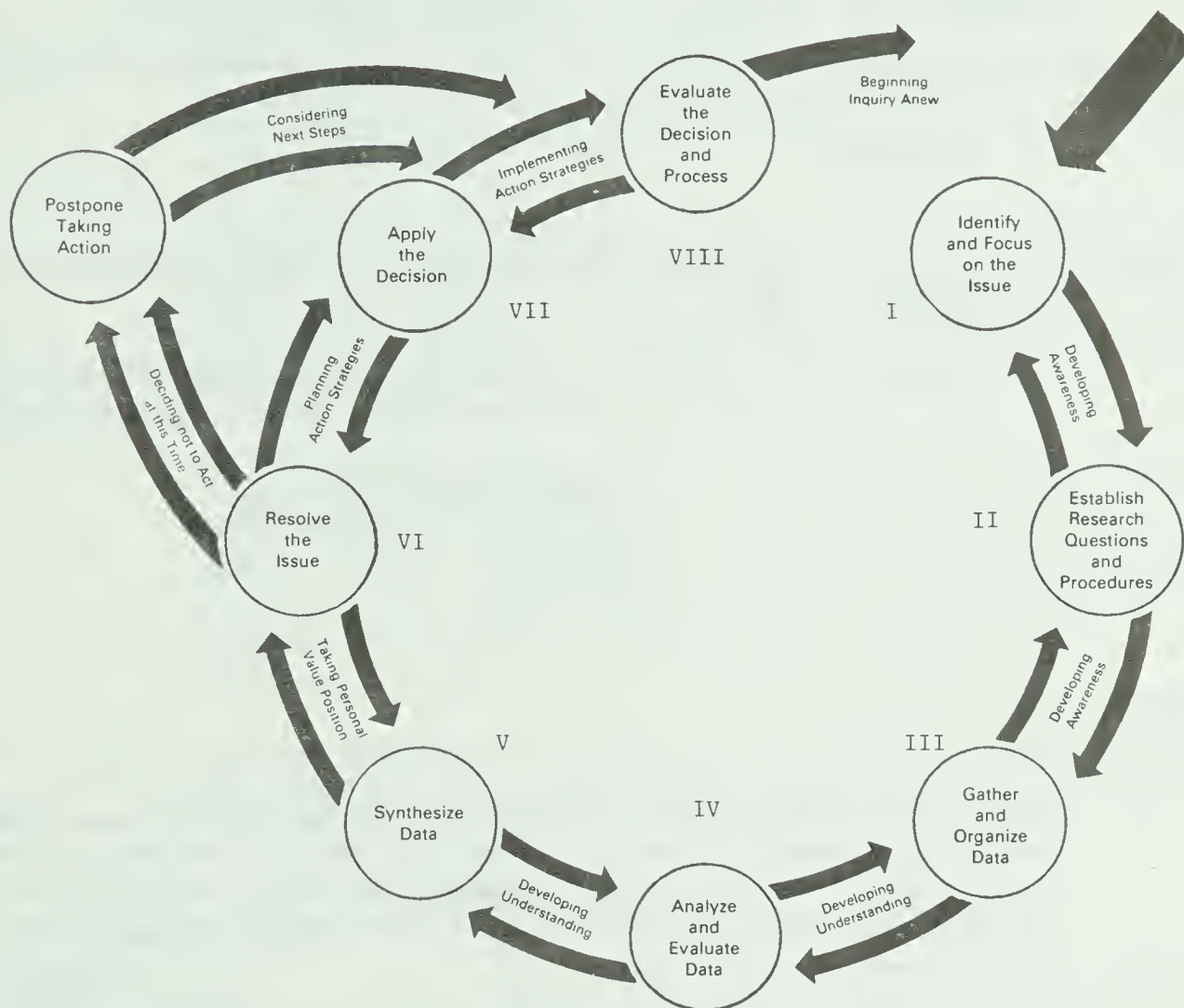
AREA OF INQUIRY AND ACTIVITIES	TIME (minutes)	RESOURCES	FOCUS OF INQUIRY
11. Historical Dramatization (optional)	40	Sequential Outline: Fishing from the Schooner Dory, SR 15	What would it feel like to be a schooner dory fisherman?
12. Grand Bank - A Fishing Village	40	<u>The Technology Connection: The Impact of Technology On Canada</u> A Comparison of Grand Bank and My Community, SR 16 and Answer Key	What differences in lifestyle are there between my community and a fishing village?
13. New Technology	80	Fishing Industry Time Line, SR 14 New Technology - Guide Sheet, SR 17 <u>The Technology Connection: The Impact of Technology On Canada</u>	What changes in technology have occurred in the fishing industry?
14. Operation Sell Fish	80-120	Atlas Roles - Outline, SR 18 Role Cards, SR 19	Where in Canada could fish consumption be increased?
IV & V ANALYZE, EVALUATE AND SYNTHESIZE DATA 15. Unions and Credit	40-80	"Echoes from the boom heard across the Pacific", TR 3 <u>The Technology Connection: The Impact of Technology On Canada</u> "Fish Story (to be continued)", SR 20 "Lobster in summer, cod in the fall, 'stamps' in winter", SR 21	How have unions and credit affected lifestyle in the fishing industry?

AREA OF INQUIRY AND ACTIVITIES	TIME (minutes)	RESOURCES	FOCUS OF INQUIRY
16. 320 Kilometre (200	80	<p>"Tangled Nets Off Newfoundland", SR 22</p> <p>"Widening the net", SR 23</p> <p>"Fishing industry nets a harvest of problems", SR 24</p> <p>"The 320 Kilometre (200 Mile) Limit", SR 25</p> <p><u>The Technology Connection:</u></p> <p><u>The Impact of Technology</u></p> <p><u>On Canada</u></p> <p><u>Across Canada: Resources</u></p> <p><u>and Regions</u></p>	How has Canada protected our supply of fish from depletion?
17. Sonar Fishing	40-80	<p>"Space-Age Fishing", SR 26</p> <p>Word Search, SR 27, Directions, Puzzle and Answer Key</p>	What effect has the use of sonar had on commercial and sport fishing?
✓ 18. Pollution and Conservation	80	<p>"Toxic sludge in Davy Jones's locker", SR 28</p> <p>"A Perspective on Mill Tailing Disposal at Kitsault, British Columbia", TR 4</p> <p>-TABLE I and TABLE II, SR 29</p> <p><u>Across Canada: Resources</u></p> <p><u>and Regions</u></p> <p><u>Canada: The Land and Its People</u></p> <p><u>The Technology Connection:</u></p> <p><u>The Impact of Technology</u></p> <p><u>On Canada</u></p> <p>"Surprise support at Amax meeting", SR 30</p> <p>"Rules made to be broken, says fisheries minister", SR 31</p>	<p>How do we control pollution and resolve conflict between industries?</p>

AREA OF INQUIRY AND ACTIVITIES	TIME (minutes)	RESOURCES	FOCUS OF INQUIRY
19. The Problem of Overfishing	80	<p>The Technology Connection: <u>The Impact of Technology</u> <u>On Canada</u> <u>Historical Fact Sheet -</u> <u>Review, SR 32 and Answer Key</u> <u>Canada: The Land and Its</u> <u>People</u> "Fishermen net more cash and catches", SR 33 "Fishing industry nets a harvest of problems", SR 24 "The big catch", SR 34 "The Myth of the Whale: A Problem of Technology", SR 35</p>	How do we solve the problem of depletion of renewable resources?
20. More Fish	40	<p>"Operating a fish farm brings entrepreneur success on a plate", SR 36 "This farmer's business is slippery", SR 37</p>	How do we build up stocks of renewable resources?
VI RESOLVE THE ISSUE			
21. The Fishing Industry and Technology: A Boon or Disaster?	40-80	None required	What has been the effect of technology on the fishing industry?
VII & VIII APPLY THE DECISION AND EVALUATE THE DECISION AND THE PROCESS			
22. Points of View - Fishing Industry	160	Any resources used in this unit	What can I do about technology and its effects?
23. Evaluating the Actions	80	None required	What are the effects of decisions I make?

I IDENTIFY AND FOCUS ON THE ISSUE

HAVE TECHNOLOGICAL ADVANCES BEEN A BOON OR A DISASTER FOR THE CANADIAN FISHING INDUSTRY?



Through a quiz and analysis of a song, the students will focus on some effects of technology on the fishing industry.

INQUIRY STEP 1	ACTIVITY 1	Make and Break Harbour
FOCUS OF INQUIRY: What have been the results of changes in technology?		
<p>INTENT: Students will become aware of problems in the Canadian fishing industry.</p> <p>Students will be able to list some of these problems.</p>		

TIME: 80 minutes

RESOURCES: Lyrics to "Make and Break Harbour" by Stan Rogers, Student Resource SR 1

Optional: This song is found on a record entitled "Fogarty Cove" by Stan Rogers FCM P/1001 distributed by:

Almada Corporation
380 rue St. Antoine Ouest,
MONTREAL, P.Q.
H2Y 1J9

INSTRUCTIONAL SUGGESTIONS:

1. Have each student read silently the lyrics to the song "Make and Break Harbour", SR 1. (Play the song if you have a recording of it.) From a careful reading you will see that the lyrics present the issue for the unit in an exceptionally dramatic and pointed way.
2. Have someone read the lyrics aloud or have the class sing along.
3. Ask the class the theme of the poem/song.
4. Divide the class into groups of four or five students. The task of each group will be to describe the images created in their minds by the song. These should be written or sketched. As well the class should begin a vocabulary list of any new words they encounter.
5. Have each group compile a chalkboard summary of their descriptions. Discuss responses, and while doing this try to elicit the emotions conveyed by each stanza.

6. Ask the students to brainstorm about any problems in the fishing industry that they know of. This step is optional, but it may be useful for your class to relate this activity to the broader context of the fishing industry in general and to their own experiences. Have the students list the problems in their notebooks.
7. Explain the word "dilemma" to the class (a choice between equally favourable or unfavourable alternatives; a difficult choice). Ask students to study the problems they have written in their notebooks in response to #6 above, and identify a problem which could be classified as a dilemma. For example, a dilemma might be to modernize or not to modernize fishing equipment. (A fisherman's need for more modern equipment might result in a larger catch and more income, but might also change the traditional fishing style that he loves. This would place him in a dilemma.)
8. Ask the students to list some of the issues facing Canadian commercial fishermen as told in this song. You may be given suggestions such as: new equipment (echosounder), migration of workers, foreign fishermen moving in, trawler fishing, cost of fuel.
9. At this time, students should be able to take the individual issues and create a general issue facing the commercial fishing industry. Our unit issue is "Have Technological Advances Been A Boon Or Disaster For the Canadian Fishing Industry?" You may wish to use this issue, or if one from the class is appropriate, use it. Have a student print the class issue on a poster and pin it on the bulletin board.
10. Ask the students for the words they have written in their vocabulary lists. Ask them to find the meanings for each.



CHALLENGE ACTIVITIES: (optional)

- A. Find other songs, poems or short stories that relate to various aspects of fishing on the east coast or west coast of Canada.
- B. Have students make a mural from the images created in #4.

OUTCOMES:

When this activity is finished, students should be expected to understand that:

1. there are problems in the Canadian fishing industry;
2. the differences between the old way of fishing and the new may be part of the problem;
3. there are a number of issues related to the dilemma.

MAKE AND BREAK HARBOUR

by Stan Rogers

How still lies the bay in the light western air
Which blows from the crimson horizon.
Once more we tack home with a dry empty hold,
Saving gas with the breezes so fair.
She's a kindly Cape Islander, old, but still sound,
But so lost in the Long Liner's shadow.
Make and break, and make do, but the fish are so few
And she won't be replaced should she flounder.

It's so hard not to think of before the big war,
When the cod went so cheap but so plenty.
Foreign trawlers go by now with long seeing eyes,
Taking all where we seldom take any.
And the young folk don't stay with the fishermen's way.
Long ago they all moved to the cities
And the ones left behind, old, and tired and blind
Can't work for "a pound for a penny".

CHORUS: In Make and Break Harbour the boats are so few
Too many are pulled up and rotten.
Most houses stand empty. Old nets hung to dry,
Are blown away, lost, and forgotten.

Now I can see the big draggers have stirred up the bay,
Leaving lobster traps smashed on the bottom.
Can they think it don't pay to respect the old ways
That Make and Break men have not forgotten?
For we still keep our time to the turn of the tide
And this boat that I built with my father
Still lifts to the sky! The one lunger and I
Still talk like old friends on the water.

CHORUS: TWICE

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INQUIRY STEP I	ACTIVITY 2	Jigging With Jargon
FOCUS OF INQUIRY: What do I know about the fishing industry?		
<p>INTENT: Students will become aware that there is a vocabulary unique to the Canadian fishing industry.</p> <p>Students will feel positively toward a study of fishing.</p>		

TIME: 40 minutes

RESOURCES: Jigging With Jargon Quiz, SR 2 Pages 1 to 4
Jigging With Jargon Quiz, SR 2 Answer Key

INSTRUCTIONAL
SUGGESTIONS:

1. Indicate to the class that they will be writing a short quiz which will test their prior knowledge related to the new unit.
2. While this is a serious quiz, its main intent is to create an enjoyable introduction to the quiz. Have fun with it.
3. Allow students 15 minutes to write the quiz.
4. Have students correct their own papers using the following techniques:
 - a. use the Answer Key, page 29, to give the correct answer to every question.
 - OR
 - b. make a frequency table on the blackboard for all the answers by asking students to indicate how many choose a, b, c, or d for each question. An example follows:

ANSWERS
(Number of students responding)

Q U E S T I O N S		a	b	c	d
	1.	6	10	8	6
	2.	20	2	8	0
	3.	7	10	4	9
	etc.				

5. Discuss with the class why they either did or did not know the correct answers.
6. Have students calculate their own scores and find their ratings (The scale is on page 4 of the Quiz).
7. Ask students to keep this quiz in their files for future reference.
8. You may use this as a pre-unit test; then without alerting students, repeat it at the end of the unit.

OUTCOMES:

When this activity is finished students should be expected to know that:

1. there are things about fishing they don't know;
2. there is a vocabulary about fishing that they don't know;
3. they'll be interested in finding out more.

JIGGING WITH JARGON QUIZ

NAME _____

TIME: 15 minutes

Carefully read each question and circle the best answer.

1. Jigging is a:
 - a. Scottish dance still found in the Maritimes.
 - b. type of practical joke derived from the Acadians.
 - c. musical instrument played by the Newfoundlanders.
 - d. method of fishing used by the Maritimers.
2. A trawler is a(n):
 - a. type of "muscle car" built in Nova Scotia.
 - b. undercover agent who works on the Vancouver waterfront.
 - c. boat used in the Grand Banks.
 - d. fisherman who speaks very slowly.
3. The Grand Banks are a(n):
 - a. area in the Atlantic Ocean where fish are found in quantity.
 - b. musical group from Moncton specializing in sea shanties.
 - c. area off Vancouver Island where salmon are found.
 - d. Indian tribe who lived by fishing.
4. A schooner is a:
 - a. vessel which holds a liter of beer.
 - b. special fishing net which traps all sizes of fish.
 - c. vessel that used to be used for off-shore fishing.
 - d. special drink composed of rum, brandy and grain spirits.
5. Plankton means:
 - a. a method of dressing fish so that it is cut square.
 - b. small sea creatures eaten by larger fish and mammals.
 - c. a special way of rigging sails on inshore fishing vessels.
 - d. fishing with large highly developed technological ships .
(from the Russian "planktovichivka").
6. A dory is:
 - a. that part of a deceased husband's estate, usually a third, which the law gives to his widow.
 - b. a person's natural talents or abilities.
 - c. a deep flat-bottomed row boat with a V-shaped stern used by salt-water fishermen.
 - d. a girl's name which is very popular in Prince Edward Island.

7. A gaff is a:
- a. trench made in the ground by a plough.
 - b. large hook with a handle used for getting large fish out of the water.
 - c. great outburst of excitement or enthusiasm.
 - d. fixed pin or short shaft on which a net turns.
8. A stage is:
- a. a small animal found only in Newfoundland. It looks like a squirrel but is a member of the cat family.
 - b. horses that were specially bred and trained for the purpose of pulling stage coaches in early New England.
 - c. a strong stick sharpened at one end used to spear fish.
 - d. a wood platform used for drying fish.
9. A sou'wester is a:
- a. coin which is the twentieth part of a franc.
 - b. painted canvas or oilskin hat with a brim that is wide at the back, worn in stormy weather by fishermen.
 - c. storm or gale coming from the South East.
 - d. mountain chain or range rising in irregular peaks, found in the Maritimes.
10. Flakes are:
- a. platforms for drying fish.
 - b. very small islands generally of granite, that dot the waters near Nova Scotia.
 - c. small icebergs that drift past the fishing areas.
 - d. dry, shredded skins of codfish.
11. Filet or fillets are:
- a. bits of smoked meat.
 - b. pieces of fish with the bones removed.
 - c. letters or symbols written by early inhabitants of Prince Edward Island.
 - d. special advertisements based on fish.
12. A purse-seine is:
- a. a large net with floats at the top and weights and a draw string at the bottom.
 - b. the art of purse making.
 - c. a safe place for keeping fish.
 - d. a name given to purse "snatching" in some countries.

13. Groundfish are:

- a. fish that feed and live near the bottom of the sea and lakes.
- b. fish that have been caught and brought into shore.
- c. used to make fishburgers.
- d. members of an exclusive swimming club in Nova Scotia.

14. A dragger is:

- a. farm machinery used to level the land.
- b. a pivot in the R.C.M.P. ride.
- c. a deep-sea fishing vessel.
- d. a logging chain used in British Columbia.

15. Scallops are:

- a. a way of cooking potatoes.
- b. a fancy trim put on small fishing boats.
- c. a type of shellfish.
- d. a symptom of a fisherman's disease.

16. The stern is:

- a. a crabby grandmother.
- b. the rear of a ship.
- c. a type of groundfish found off the Grand Banks.
- d. the name for a heavy weight used to anchor a ship.

17. Coho is a:

- a. Newfoundland drink.
- b. call used by fishermen in the fog.
- c. byproduct from the cocoa bean.
- d. type of salmon.

18. A fish ladder is:

- a. a device used to aid salmon returning upstream.
- b. the order of authority in a school of fish.
- c. a conveyor belt used to move fish in the canneries.
- d. an instrument used to measure the length of fish.

19. Pushthrough is:

- a. a brake on the engine in a small fishing boat.
- b. an exercise for "Participaction".
- c. a compound word having no meaning.
- d. a small fishing village in northern Newfoundland.

20. An echo-sounder is used to:

- a. detect the depth of water or depth of a school of fish.
- b. make an echo when recording music in a studio.
- c. make an echo in foggy weather.
- d. measure the intensity of an echo.

21. A fish-hold is:

- a. a special hook which clamps the fish when it is caught.
- b. a special fork for use when eating fish.
- c. a wrestling hold.
- d. an aluminum bin in a ship where the fish are iced.

22. Automation is:

- a. the use of automobile engines in fishing boats.
- b. the use of machines to take the place of people when doing work.
- c. a new car from General Motors.
- d. a machine that fillets fish.

23. Radar is a:

- a. device to warn fishing boats of an approaching boat or obstruction.
- b. gauge that indicates when the nets are full.
- c. device that searches for schools of fish.
- d. pump that takes water from the hold of the fishing boat.

24. Fishermen use marker buoys to:

- a. help find fish in deep water.
- b. help pull in the nets when they are full.
- c. measure the catch of fish.
- d. show them the proper channel to follow.

Check your score with our "jigging" rating scale.

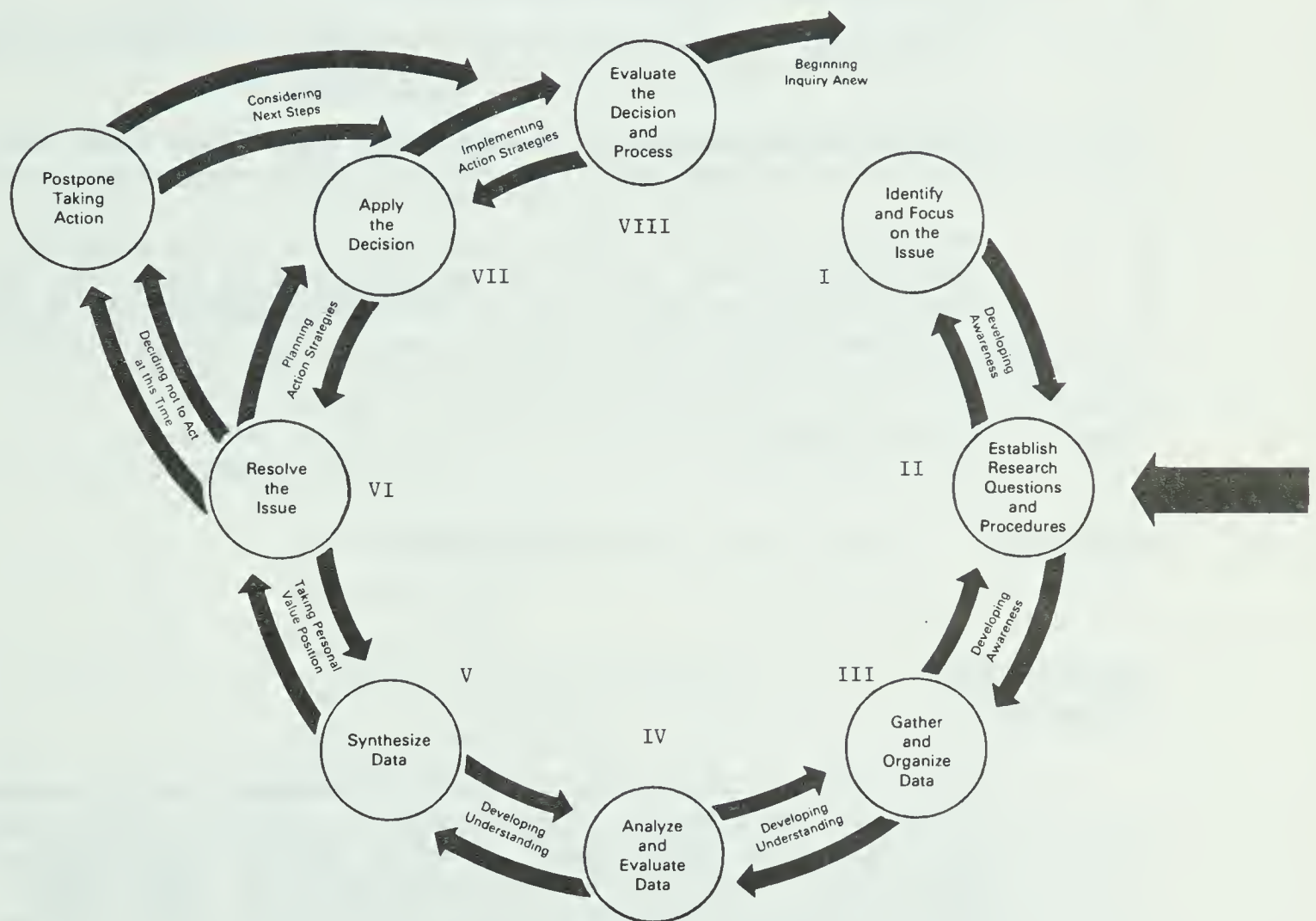
1 - 6	Let's face it, you're not a fisherman.
7 - 12	You must get seasick, a landlubber at heart.
13 - 18	A fair weather fisherman.
19 - 24	Bait your hook, you're ready to fish.

JIGGING WITH JARGON QUIZ

- | | |
|-------|-------|
| 1. d | 13. a |
| 2. c | 14. c |
| 3. a | 15. c |
| 4. c | 16. b |
| 5. b | 17. d |
| 6. c | 18. a |
| 7. b | 19. d |
| 8. d | 20. a |
| 9. b | 21. d |
| 10. d | 22. b |
| 11. b | 23. a |
| 12. a | 24. d |

II ESTABLISH RESEARCH QUESTIONS AND PROCEDURES

WHAT ARE THE PROBLEMS IN THE CANADIAN FISHING INDUSTRY?



With the use of a film and readings, students clarify some specific questions related to technology and fishing, thus providing clear guidelines for their subsequent research.

INQUIRY STEP II	ACTIVITY 3	Where Do We Go From Here?
FOCUS OF INQUIRY: What is involved in this study?		
<p>INTENT: To provide a student checklist of core activities to be completed in the study of this unit.</p> <p>To provide students with an understanding of how the activities in the unit relate to the social inquiry model.</p> <p>To provide students with an opportunity to shape their own inquiry techniques and to develop skills in organizing research.</p> <p>To provide students with an understanding of the purpose of the bulletin board display to be developed in this unit and an understanding of their role in the development of the display.</p>		

TIME: 40 minutes

RESOURCES: Unit Activity Checklist, SR 3

INSTRUCTIONAL SUGGESTIONS:

1. Following the fishing quiz, assist the students in the making of a classroom display. They should be asked to collect labels from products of the fishing industry, from as many Canadian sources and of as great a variety as possible. For example, advertisements and articles could be included. This display should be added to throughout the unit.
2. The display will be made up of:
 - a. Map Display

There are alternate ways of making a map display, depending on the teacher's choice and the response of the students:

- A large outline map of Canada, or the east and west coastal areas, could be reproduced from an atlas. Form a small student committee to locate each product's place of origin, and as labels come in develop a system for marking them on the map.

- . Prepare a collage of the labels and ads.
- . Make a chart classifying the products to develop an awareness of the range of products.

The display will be used as a focal point for discussion in activities to come (i.e., in the history lessons when the Grand Banks are first noted as attracting fishing expeditions to North America shores). The map display should include:

- place names
- the 320 kilometre (200 mile) limit, see Activity 16
- labels from fishing products

b. Vocabulary Display

After each lesson have one student locate the new words to be added on an on-going basis to this display. This display could be built by entering the words into appropriate categories such as:

- fishing equipment
- fishing vessels
- types of fish
- problems in fishing industry
- types of industries
- industry in Canada

3. Briefly review the idea that although we are looking at technology and change in the fishing industry, it should help us understand the impact of technology on our own lives as well. Suggest to your students that this case study will help them understand other parts of Canada as well as technology and lifestyles. On the basis of their response to "Make and Break Harbour" ask the class to identify some of the ways we could learn more about the effects of technology on fishing and our own lives. List the responses on the blackboard.
4. Now hand out the Unit Activity Checklist, SR 3. Explain that these are basic activities which should be completed in students' notebooks or folders. After each activity is completed, the students should indicate the date completed beside it. Additional activities that the class becomes interested in can be added at the appropriate time in the unit. (See special note on page 34).

Compare the blackboard list with the Unit Activity Checklist, SR 3. You will have to explain briefly some of the contents and processes of the activity, as the title may not be self-explanatory. Be sure to emphasize the steps in the social inquiry model as they appear as headings on SR 3.

You may wish to add other activities to the checklist from those identified by students.

This activity serves as an advance organizer to alert students to both the content and processes found in the unit.

OUTCOMES:

At the end of this activity, students should have guidelines for activities to be completed in the unit. On their bulletin board they should have a visual display about fishing, and a word list of unfamiliar terms.

Specifically, they should have related the checklist of activities to the social inquiry model.

SPECIAL NOTE TO TEACHERS

The Unit Activity Checklist, SR 3, may not fit your teaching style or students' suggestions for research. However, it should give you a core of ideas to begin with in teaching this topic. For each of the "inquiry areas" there are numerous activities that you can substitute to teach the prescribed skills for Topic 9C. You definitely should include students' suggestions for research if these are related to the issue. In this way, they will develop insights into how to set up their own inquiry and acquire specific skills for Inquiry Skill II.

UNIT ACTIVITY CHECKLIST

Have technological advances been a boon or a disaster to the Canadian fishing industry?

When you finish an activity, add the date of completion.

<u>ACTIVITY</u>	<u>DATE COMPLETED</u>
I IDENTIFY AND FOCUS ON THE ISSUE	
1. Make and Break Harbour -Issues in the fishing Industry	_____
2. Jigging with Jargon -Quiz SR 2	_____
II ESTABLISH RESEARCH QUESTIONS AND PROCEDURES	
3. Where Do We Go From Here? -Unit Activity Checklist SR 3	_____
4. Change in the Maritimes -Questions SR 4	_____
III GATHER AND ORGANIZE DATA	
5. Relationships in a Region -Relationships in a Region SR 5 -Outline Map of Canada SR 6 -Retrieval Chart SR 7	_____ _____ _____
6. Location of the Canadian Fisheries -Atlantic Shapes SR 8 -British Columbia Map SR 10	_____ _____
7. Characteristics of Areas For Good Fishing -Questions SR 11	_____
8. Review of Types of Industry -Graph SR 12	_____
9. Historical Aspects of the Fishing Industry -Fishing Industry Time Line SR 14	_____
10. Fishing From The Schooner Dory -Sequential Outline SR 15	_____
11. Historical Dramatization (optional) -Sequential Outline SR 15	_____

<u>ACTIVITY</u>	<u>DATE COMPLETED</u>
12. Grand Bank - A Fishing Village -A Comparison of Grand Bank and My Community SR 16	_____
13. New Technology -Guide Sheet SR 17 -Fishing Industry Time Line SR 14	_____ _____
14. Operation Sell Fish	_____
IV & V ANALYZE, EVALUATE AND SYNTHESIZE DATA	
15. Unions and Credit	_____
16. The 320 Kilometre (200 Mile) Limit -Questions SR 25	_____
17. Sonar Fishing -Essay on "The Impact of Sonar..." -Word Search SR 27	_____ _____
18. Pollution And Conservation -Group report	_____
19. The Problem of Overfishing -Historical Fact Sheet - Review SR 32	_____
20. More Fish	_____
V RESOLVE THE ISSUE	
21. The Fishing Industry and Technology: A Boon Or Disaster? -Position paper	_____
VII & VIII APPLY THE DECISION AND EVALUATE THE DECISION AND THE PROCESS	
22. Points Of View - Fishing Industry -Exercise 1, 2, 3, 4, 5, and/or 6	_____
23. Evaluating the Actions	_____

INQUIRY STEP II	ACTIVITY 4	Change in the Maritimes
FOCUS ON INQUIRY: How is lifestyle affected by attitudes toward materialism and changes in technology?		
<p>INTENT: Students will become aware that there are problems in the Atlantic fisheries and that the solutions offered are not always acceptable to all interest groups.</p> <p>Students will consider aspects of materialism and lifestyle.</p>		

TIME: 40 minutes

RESOURCES: Film - "Change in the Maritimes", National Film Board of Canada
 "Change in the Maritimes" Questions, SR 4
 Change on the Coast of Newfoundland, Teacher Resource, TR 1, pp. 1-3
 "Tack's Beach", TR 2

INSTRUCTIONAL
SUGGESTIONS:

1. Review the issues developed from the song "Make and Break Harbour".
2. Tell the class that the film they are to see examines more problems in the Atlantic fisheries and attempts to present some solutions. Tell them that one of the issues raised has to do with "materialism". Write a definition on the black-board, such as "the tendency to care too much for the things of this world". As students watch the film, have them find evidence as to who is probably the more materialistic - people in small fishing villages or people in cities.
NOTE: You may wish to further expand the concept of materialism by using local examples.
3. Distribute "Change in the Maritimes" Questions, SR 4, to the students. Have the students read them. Ask students if any of them need clarification.
4. Show the film "Change in the Maritimes" (15 minutes) to the students.
5. Students should be given time to answer the Questions SR 4 either individually or in groups.

6. Discuss the responses with the whole class to ensure that the major ideas have been listed.

NOTE: If you are unable to obtain the film you might use the materials in #7 and #8 below to create a similar lesson.

7. For information on how Newfoundland is trying to provide more jobs, see Canada: Profile of a Nation by Molyneaux and Jones, pp. 71-77.
8. Teacher Resource TR 1 Change on the Coast of Newfoundland and TR 2 "Tack's Beach" outline more of Newfoundland's attempts to overcome her unemployment problem.

OUTCOMES:

When the activity is finished students are expected to understand that:

1. natural resources in the Atlantic region are in short supply;
2. moving people from villages to cities and re-educating them may solve some of the poverty problems;
3. some of the villagers would rather remain "poor" than change their way of life, that is, they prefer their present life-style;
4. people who live in small fishing villages seem less materialistic than city dwellers. They make more of their own goods and entertainment and neither expect nor buy as much as people in cities.

"CHANGE IN THE MARITIMES" QUESTIONS

1. What are the traditional resources of the Atlantic region that are being exhausted?
2. What can be done to increase job opportunities and raise the living standard?
3. Professor Smith suggests two reasons for much of the poverty in the region. What are they?
4. How does education help to prepare the people of the region to cope with a changing technology in industry?
5. Professor Smith wants most village people to move into larger towns and cities. Many of them might get a vocational or technological education and work in factories. Robert Tanner, the fisherman, wants to hold on to the simple, traditional way of life he knows and loves.
 - a. Which way of life do you prefer? Why?
 - b. Is the professor right? Explain.
 - c. Must education and urban living go together? Discuss.
6. Would moving into cities make people more materialistic? Why or why not? Give some examples.
7. What are the pros (good points) and cons (bad points) of locating new industries in the Atlantic provinces rather than the central part of Canada?



CHALLENGE ACTIVITY:

Are there other industries or areas in Canada suffering from problems due to a decline in resources? What are they? Where are they located? Do you know of possible solutions or can you suggest some solutions to the problems?

ACTIVITY 4

SAMPLE STUDENT WORK FOR SR 4

"CHANGE IN THE MARITIMES"

1. The traditional resource that is declining is fish and lumbering.
2. To raise the living standard, the government could provide the people with education and with better living conditions in the urban areas.
3. Two reasons for poverty were that the people in the rural areas were too stubborn to change their ways and the other was that the younger generations grew up with the idea of fishing as their future roles.
4. By preparing the people, they would be able to learn how to use the new technology to help them cope with and improve their methods of fishing (e.g. sonar).
5. a) I prefer to get a vocational or technological education and work in factories because I feel that I must change in my ways (modernize) rather than keeping a traditional way of life.
b) Professor Smith is right because he thinks that the people living in the rural areas need to change their way of life and to modernize in industry along with the rest of the country.
c) Yes, education and urban living must go together. This is because the people with an education can find jobs easier in the city rather than the country, because the city is highly developed and the country is not.
6. _____
7. The pros for locating an industry in the Atlantic provinces are that it provides an excellent location for a fishing industry because the Atlantic province is close to a good and plentiful source of fish. The cons for industries in the Atlantic provinces would be, they would be far from the other provinces in Canada, and the area would be too small for a large industry to develop.

Ellen Leong

CHANGE ON THE COAST OF NEWFOUNDLAND

Since more technological devices were being used in fishing, fishermen in small communities on the coast of Newfoundland found it hard to compete with large-scale commercial fishing. The communities where they lived were isolated and scattered along Newfoundland's 9,091 kilometres of coast. The government found it difficult to provide services such as mail, education, electricity, police, transportation, medical care, and telephones. To solve these problems, the provincial government began a resettlement program in 1953 to consolidate communities.

With great reluctance the fishermen and their families moved to new and larger communities even though it meant leaving their traditional way of life behind them. Since jobs related to fishing were scarce, even after moving, many Newfoundlanders moved to cities in Ontario or further west. The reading which follows tells you how the Newfoundland government forced some fishermen to change their way of life.

The Islanders were always much more closely linked to the seaboard peoples of Europe than to those of North America. Until two decades ago they had no real political, little social and cultural, and not even much commercial affiliation with this continent. In 1867, when confederation with Canada was first mooted, Newfoundlanders lustily sang this song:

*Hurray for our own native land, Newfoundland!
Not a stranger shall hold an inch of her strand.
Her face turns to Britain, her back to the Gulf.
Come near at your peril, Canadian Wolf!*

And they were still singing the same song when Confederation came upon them.

The man who engineered Confederation was Joseph Smallwood, once a labour organizer and once a pig farmer, but always and forever a political animal; combining messianic visions with the essential ruthlessness of an Alexander, or a Huey Long. He became the first premier of Canada's newest province in 1949, and still remains its premier after a reign of nineteen years. "King Joey," as he is called (sometimes affectionately, sometimes with bitterness), has tried to transform his island kingdom into an industrialized principality, dependent on and imitative of the Admass society of Canada and the United States. "Off with the old and on with the new" is his guiding principle, and he has applied it with a vigour and a haste that have made no reckoning of the psychic and spiritual havoc it has created in the lives of his own people.

The day that Smallwood came to power, the continuity and evolution of the Newfoundland way of life was disrupted, probably forever. Newfoundland turned its back upon the sea which had nurtured her through five centuries. Fishing and fishermen, ships and seamen became obsolete. Progress, so the new policy dictated, demanded the elimination of most of the thirteen hundred outport communities that encircled the island, and the transformation of their people into industrial workers. Progress dictated that the men of the sea forswear their ancient ways of life and move, as rootless migrants,

to the alien milieu of industrial and mining towns. The entrepreneurs of the new industries wanted abundant labour and, of course, they preferred it cheap. The outport people had to be induced – and if not induced, then forced – to abandon the ways and the world they knew.

The tactics used combined both methods. The first step was to wither the fisheries and the mercantile marine by withholding the support which would enable them to make the transition into effective economic enterprises of the twentieth century. With their underpinnings knocked out the outports began to totter; but they did not fall, for their intrinsic strength was greater than the politicians had anticipated. The next step was to reduce basic services, or to fail to maintain them in the outports at a level comparable to that available to citizens in the factory towns. Outport schools found they could no longer obtain teachers; those regions (like the Sou'west Coast) whose main communications were by sea, found that the government-owned steamer-service was deteriorating. But the heaviest pressures were brought to bear through reduction in medical services. On the Sou'west Coast many outports found themselves going without a visit from a doctor for as much as ten months at a time, even though two government doctors were resident on the Coast and could call on helicopters and float-planes with which to reach the settlements.

In conjunction with these "deprivation tactics" the government devised a centralization plan. Outporters were to be subsidized into moving to a few chosen "growth centres" on the coasts. At first people were offered \$500 per family, provided that every family in an outport agreed to move. The size of this "assistance grant" has since been substantially increased, but it still falls far short of compensating the people for their abandoned houses, or for the cost of buying or building new homes in the chosen towns.

Whatever the tactic used, the aim itself is dubious in the extreme. The *raison-d'être* for the centralization plan is to create viable new economic and social units. Yet Burgeo, a typical growth centre on the coast, has suffered a massive expansion in its population without any increase in ways to provide it with a decent way of life. The one fish-processing plant in the town employs only a fraction of the employable people already living there, and it pays them only minimal and intermittent wages. Many of the younger men can find work neither at the plant nor on the fish company's ships, and are forced to seek work as far away as central Canada. Those fishermen who are determined to stick to the sea receive almost the same price for their fish today that they did fifteen or twenty years ago. Burgeo is not a growing community; despite its increase in size, it is a dying community; and it may be that this too is part of the plan, for a people once uprooted can more readily be forced to move again.

The heritage of the outport people at the time of Confederation held a promise for the future – a promise that a strong, venturesome, and viable people could move into our modern world with no loss of their own sources of strength, and perhaps with a great gain to the waning strength of other men elsewhere. It was a promise that had little or no meaning to the apostles of instant change.

I remember a summation of the outport people made to my wife and myself by a woman doctor, an employee of the new government who held a most responsible position on the Sou'west Coast. We were aboard the coastal steamer as she nosed into Burgeo harbour. The steamer blew a long and lugubrious blast on her whistle and, as the sound echoed amongst the islands, men, women and children began to appear from the scattered houses and move toward the wharf. The doctor, standing beside us at the rail, gestured toward them: "These people are scum. They are descended from scum, and they are still scum."

But I also remember a stormy evening in February when John de Visser and I sat in the snug kitchen of a fisherman's home in the village of François. Present with us were three men, a woman, and a girl-child. John and I had spent most of the day photographing the men as they hand-lined for cod from dorys pitching in a gale of winter wind. Now the time had come for rest and talk. As had been the case during most of the evenings we spent along that coast, the talk ranged wearily over the problems of a people who had no future, of a way of life whose end could not long be postponed.

After a while there was silence; it was the silence of men who, for the first time in their lives and, perhaps, for the first time in the lives of their people, were experiencing the ultimate bewilderment that had come upon them with recognition of the truth that they were completely helpless to save themselves.

The woman brought a pot of fresh tea to the table where we sat and filled our mugs. As she returned to her seat by the stove to begin combing her daughter's hair, her husband broke the silence.

"It's been fine you came to visit us. I hopes your 'snaps' turns out just what you was after, and that you'll make a good voyage out of them – a prosperous voyage, you know. But still and all, I'm wondering could you, maybe, do one thing for we? Could you, do you think, say how it was with us? We wouldn't want it thought, you understand, that we never tried the hardest as was in us to make a go of things. We'd like for everyone to know we never would have left the places we was reared, but . . . we . . . was . . . drove!"

The last word burst into the quiet room with a terrible intensity. The little girl, who had been half-asleep as the comb slipped through her long dark hair, stared up at her father with astonished eyes.

He slowly lowered his head until he was looking with an unseeing gaze at the splayed hands with which he clutched the table-top before him. Unconscious of us all he spoke once more, no louder than the half-heard murmur of the black waters gentling the pilings of the landing stage outside the door.

"Aye Jesus, Jesus God, but we was drove!"

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TACK'S BEACH

Tack's beach was one of the communities that relocated:

Though isolated, Tack's Beach was by no means a rude and impoverished fishing village. Until 1963, the community processed over 3,000 barrels of herring a year (according to a local merchant, 3,650 barrels of herring were shipped from Tack's Beach in the first six months of 1963). Since then, however, its herring output has dropped to about 500 barrels a year, causing dissatisfaction among those dependent upon the herring fishery. In a good season the local merchant bought and processed six to nine thousand quintals of fish and, in partnership with his brother, grossed from \$150,000 to \$160,000 per year.

In 1965 the average income before taxes of the fifteen families interviewed was about \$1,650, which is approximately \$405 per capita. To the modern urban dweller an income this low would constitute serious impoverishment. The situation was not as hopeless as this per capita income suggests, although one does not maintain a varied and affluent style of life on

less than \$500 per person per year. Expenses were low in Tack's Beach, for among these fifteen families no one owned a car, no one made rental or mortgage payments on their house, no one paid real estate taxes, and no one (except the merchant) spent as much as \$10 a month for heat and electricity combined. No one had a telephone.

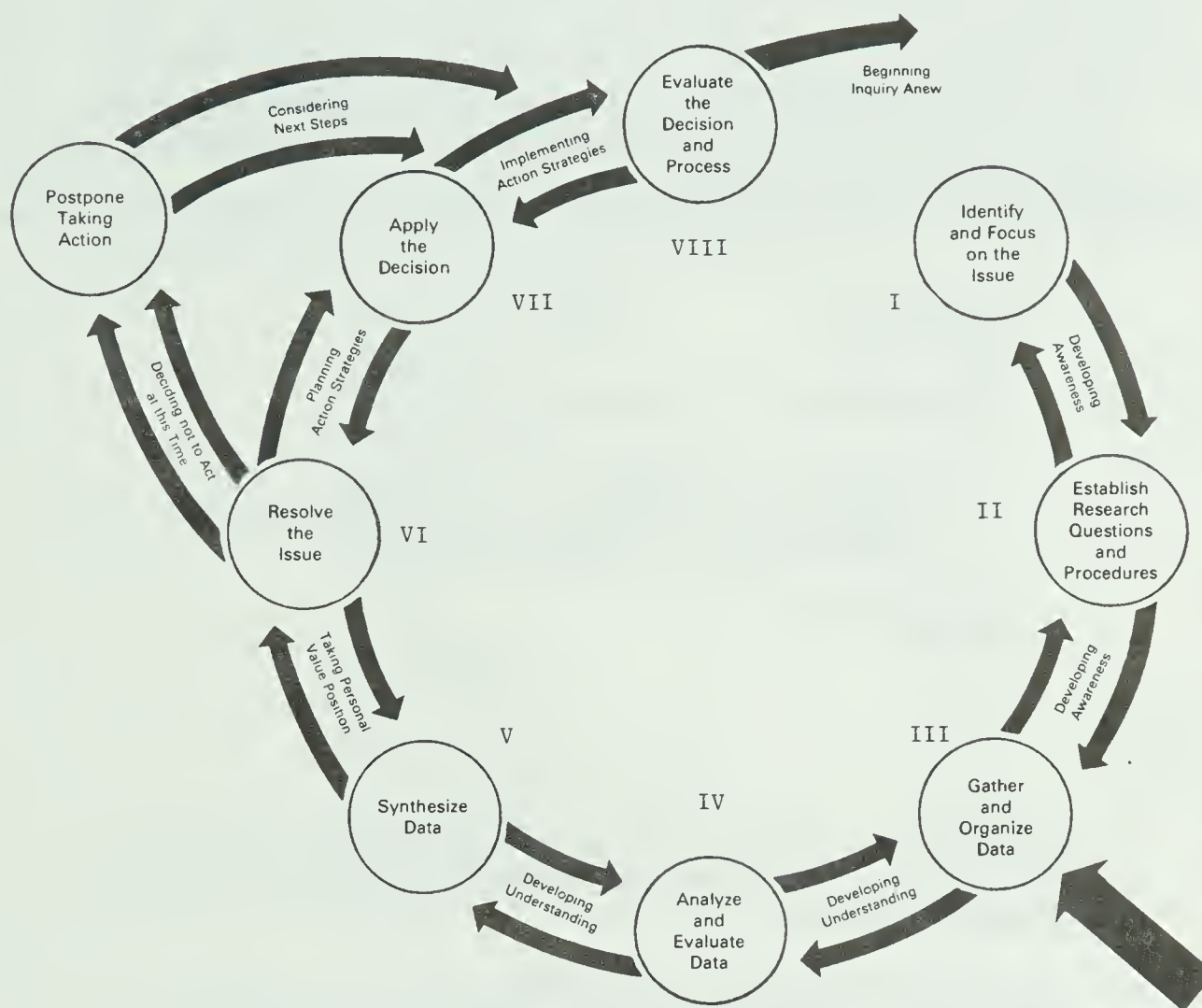
The same income a year later (and for this group the per capita income in 1966 fell, as the number of unemployed and retired rose) falls critically short of meeting basic requirements, for the cost of living increases several-fold when a family leaves its simple island life and begins a new and comparatively expensive style of life on the mainland. Mainland existence harbours a great many traps that seize upon the meagre incomes of lower class families, steadily exhausting their resources. Virtually everything costs more on the mainland, and there are many more things to spend money on.

N. Iverson and R. D. Matthews,
Communities in Decline

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Newfoundland, St. John's.
From Communities in Decline
by N. Iverson and R. D.
Matthews.

III GATHER AND ORGANIZE DATA

WHERE IS THE CANADIAN FISHING INDUSTRY LOCATED? WHY? TYPES OF INDUSTRIES? HISTORY OF FISHING? NEW TECHNOLOGIES IN FISHING?



Through ten activities focusing on geography, history, economics, and new technology, the students acquire important background related to fishing in Canada.

In Activities 5 through 14 (the "Gather and Organize Data" stage of the Inquiry Process) you will find a series of activities dealing with the relationship of technology to the physical environment and the impact of this technology on environment and lifestyle. If you wish to broaden your activities beyond an emphasis on fishing, there is no reason why this particular sequence has to be followed. It could be varied, expanded or deleted, to suit a specific social issue and research questions you and your students have developed.

INQUIRY STEP III	ACTIVITY 5	Relationships in a Region
FOCUS OF INQUIRY: How are industries in Canada related to natural resources?		
INTENT: Using the provinces of Canada as a base, students will become familiar with physical characteristics, population, and industrialization processes in each.		

TIME: 180 minutes

RESOURCES: Relationships in a Region, SR 5

- An atlas of Canada
- Canada: The Land and Its People, pp. 4-7, 8-38
- Outline Map of Canada, SR 6

Retrieval Chart, SR 7

INSTRUCTIONAL
SUGGESTIONS:

1. To introduce the idea of a relationship between physical characteristics, resources, and industrialization, ask the following questions:
 - a. Why doesn't Alberta have a salmon fishing industry? (no ocean, no salt water, no salmon)
 - b. Why don't we grow oranges in Canada? (too cold)
 - c. Why doesn't Newfoundland grow a lot of wheat? (lack of soil and level land, climate not the best there)
 - d. Why aren't there pulp and paper mills in Southern Alberta? (few trees, too dry)
 - e. Why doesn't Saskatchewan make steel? (no iron ore)
2. Now we can make a tentative statement about the relationship between the resources of an area and its industries. Either have class members volunteer statements or put one on the board. Example: The climate, minerals, vegetation, and other resources help to determine the industries of an area.

3. We are going to check the truth of this by looking at the regions of Canada. Divide the class into groups of two or three and assign or let them choose one province or territory to study (12 groups).
4. Give a copy of "Relationships in a Region", SR 5 to each group and explain that they will become the experts on their particular province. The purpose is not to know all about the province, but to look at the relationships between the resources of the area and its industries.
5. For population figures, have students use the Canadian Yearbook or give them these figures which are from the 1981 Canada Census:

British Columbia	- 2,744,467
Alberta	- 2,237,724
Saskatchewan	- 968,313
Manitoba	- 1,026,241
Ontario	- 8,625,107
Quebec	- 6,438,483
New Brunswick	- 696,403
Nova Scotia	- 847,442
Prince Edward Island	- 122,506
Newfoundland	- 567,681
Northwest Territories	- 45,741
Yukon	- 23,153

6. When the groups have completed their data gathering and analysis, hand out a copy of the Retrieval Chart, SR 7.
7. Have each group present their information so that the rest of the class can complete the chart.
8. Ask the class whether these reports confirm or disprove the original statement related to the relationships between resources and industries.

OUTCOMES:

When this lesson is completed, students should have an idea of the physical resources of Canada as well as be able to state that resources influence industrialization in a region. Further, students will see the relationships between population, resources, and industrialization.

To do this study you need:

- An atlas of Canada
- Canada: The Land and Its People pp. 4-7, 8-38
- Outline Map of Canada, SR 6

1. Check the maps on pages 4 to 7 of Canada: The Land and Its People. Note the different physiographic, climatic, vegetation, and soil distributions found in the province or territory you are researching.
2. On pages 8 to 38 in Canada: The Land and Its People, read about the regions that are found in the province or territory you are researching. Identify information for the following topics, noting variances across the province.

- a. climate _____

- b. soils _____

- c. landforms _____

- d. major bodies of water/rivers _____

- e. vegetation _____

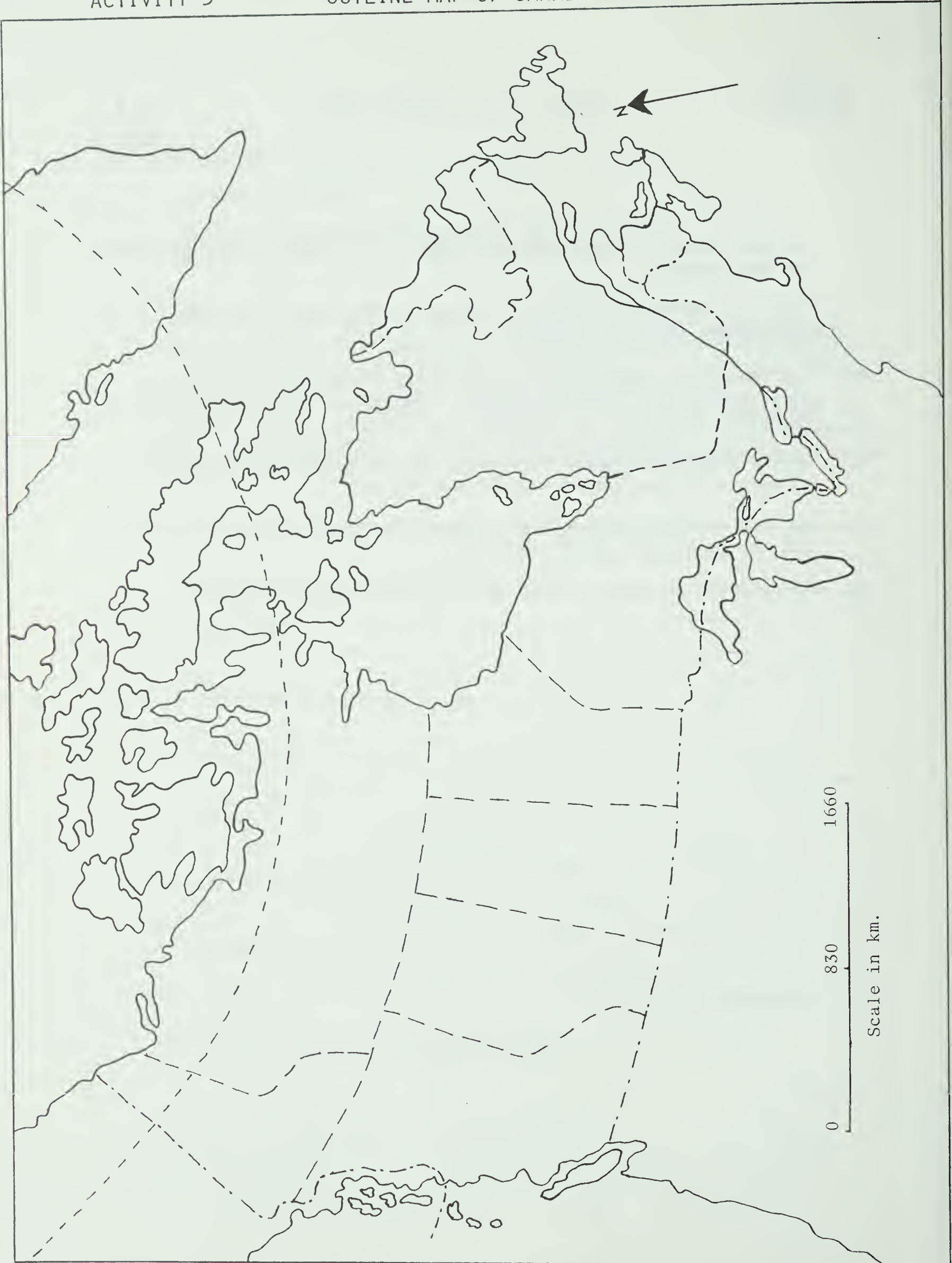
- f. minerals _____

- g. energy resources _____

- h. population _____

Verify this information from your atlas.

3. In your atlas find maps showing industries. What are the industries in your region?
4. List the industries that are related to the physical resources in your area.
5. Are there any industries that don't seem to be related to the physical resources in your region? Can you suggest why these may be here?
6. Make a general statement that shows the relationship between the resources in your region and the industries.
7. Can you see any relationships between the population in your region and the resources. What are they?
8. Be prepared to tell the rest of the class about your region.



British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec

PHYSICAL CHARACTERISTICS
OF REGION

- Landforms
- Bodies of Water
- Climate
- Vegetation
- Minerals
- Energy Resources
- Population

INDUSTRIES OF REGION

New Brunswick	Nova Scotia	Prince Edward Island	Newfoundland	Northwest Territories	Yukon

PHYSICAL CHARACTERISTICS
OF REGION

- Landforms
- Bodies of Water
- Climate
- Vegetation
- Minerals
- Energy Resources
- Population

INDUSTRIES OF REGION

INQUIRY STEP III	ACTIVITY 6	Location of the Canadian Fisheries
FOCUS OF INQUIRY: Where is the fishing industry located?		
INTENT: Students will become familiar with the location, shapes and sizes of the important areas along the east and west coasts of Canada. They will also recognize the ocean currents and fishing banks.		

TIME: 80 minutes

RESOURCES: Atlantic Shapes, SR 8

Atlantic Provinces Map, SR 9

Class set of scissors - one per student

Bottles of glue

An atlas of Canada

Across Canada: Resources and Regions, pp. 271-278

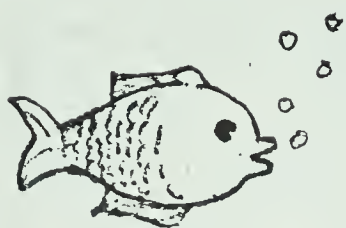
Canada: The Land and Its People, pp. 104-105

British Columbia Map, SR 10

INSTRUCTIONAL SUGGESTIONS:

1. Tell the class that you are handing out a set of shapes and that they are to guess what the shapes represent.
2. Distribute the handout of the Atlantic Shapes, SR 8. Ask the class to cut out the shapes. Some may wish to try to identify the pieces. This may take some time.
3. Distribute the Atlantic Provinces Map, SR 9. Ask the students to place their shapes on the correct areas. Tell them to notice how they fit. Suggest that they look for relationships between one part and another.

4. Now have students remove the shapes and turn the outline map over. Distribute a piece of blank paper to each student and have them place their shapes on this. When they are satisfied with the organization have them check it against their outline map.
5. Make any adjustments and glue the shapes in place. Add the same boundaries as on the outline map.
6. To the original outline map of the Atlantic provinces, have students add the capital cities of each province. (For this they may need an atlas.) They might also suggest other important towns to be added.
7. The limit of the continental shelf could be added. Students may refer to Across Canada: Resources and Regions, pp. 271-278 and Canada: The Land and Its People, pp. 104-105 for further information.
8. To the map (created by the students), students should add the names of the political units, Gulf of St. Lawrence, Anticosti Island, the smaller fishing banks, Grand Banks and Georges Bank as well as the Gulf Stream and the Labrador Current.
9. Check to see that students have given each map a title and have printed the place names on them.
10. Since the British Columbia coast is a more complex region, students should concentrate on the major areas: Vancouver Island, Queen Charlotte Islands, the Alaska boundary, and Washington State boundary. Use the British Columbia Map, SR 10 for the outline. Have each of these parts labelled. In addition have the students label Vancouver, Victoria, and Prince Rupert.
11. The limits of the continental shelf should be sketched in as well as the courses of the Skeena and Fraser Rivers.
12. The ocean current influencing this area should be included. It is variously known as the Japan Current, Kuro Siwo, Kuro Shio, North Pacific Drift and North Pacific Current.
13. If there is time remaining students might identify the areas where various types of fish are found. A few could be added to the maps.



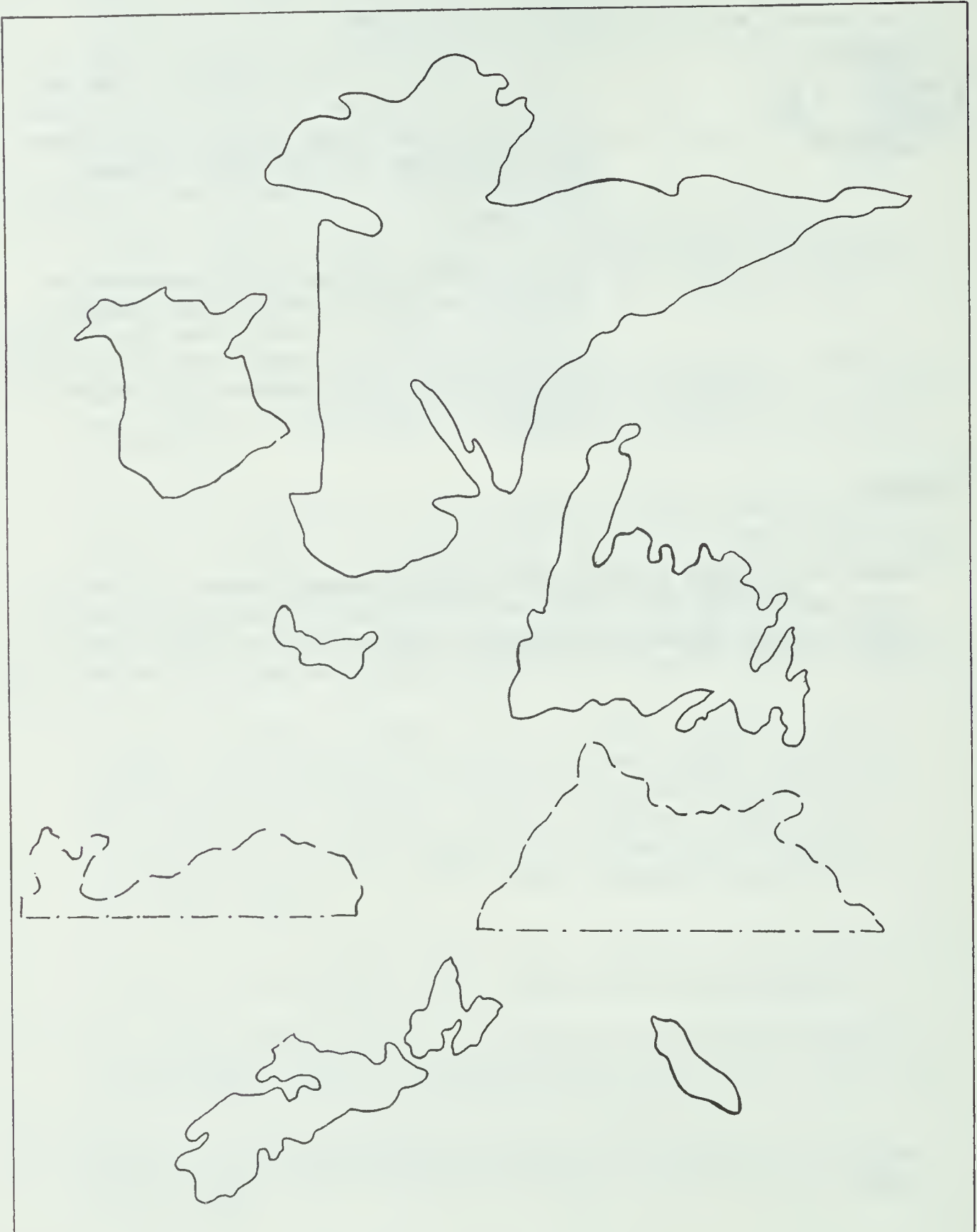
CHALLENGE ACTIVITIES:

- A. In this activity or a later one, you may wish to bring fish to class and have the students clean them. This could be done in conjunction with science. Stomach contents could be examined and dissection performed.
- B. Ask students to compare the maps of the Atlantic provinces and British Columbia in terms of area. Which shows the largest area? How do they know? This study gives an opportunity to reinforce the concept of scale.

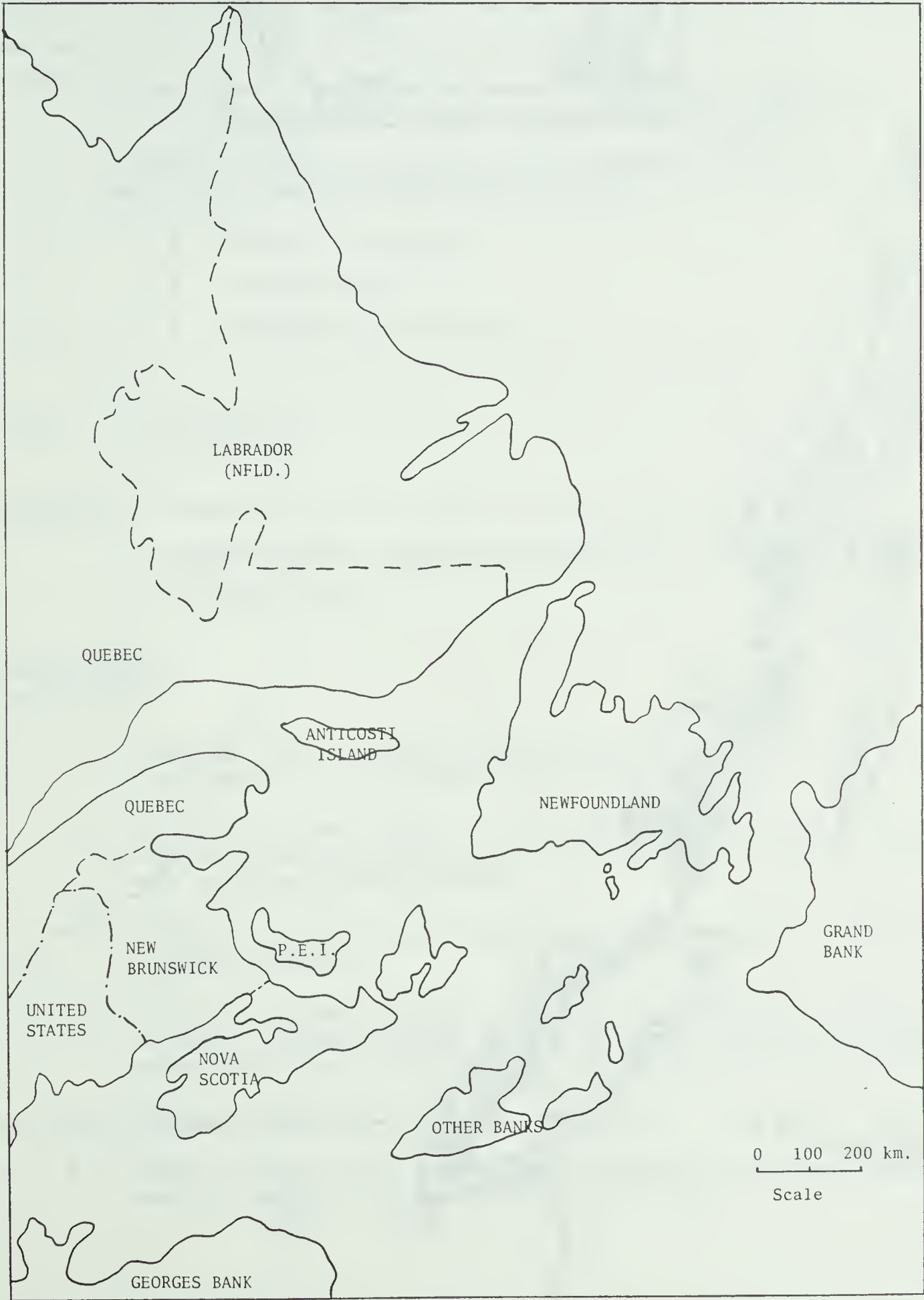
OUTCOMES:

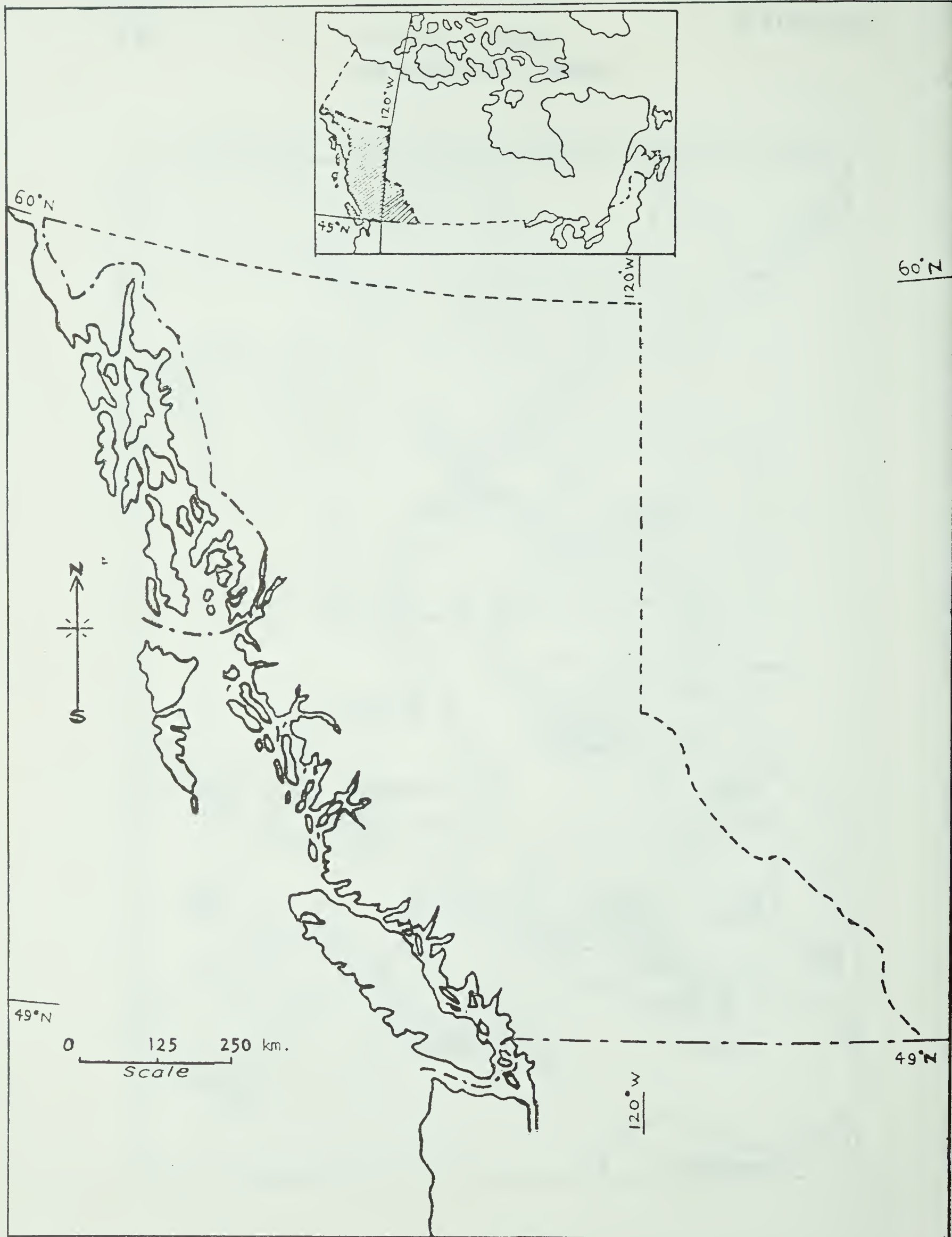
When this lesson is finished students should be able to identify some major geographic features and recognize them by size and shape. They should also know the ocean currents influencing the areas and the range of the fishing banks and the continental shelf.

ATLANTIC SHAPES



ATLANTIC PROVINCES MAP





INQUIRY STEP III	ACTIVITY 7	Characteristics of Areas for Good Fishing
FOCUS OF INQUIRY: What determines the location of the fishing industry?		
<p>INTENT: Students will know that the location of primary industries is influenced mainly by the location of raw materials.</p> <p>Students will state that the following factors make Canada's east and west coasts excellent fishing areas:</p> <ul style="list-style-type: none"> ● mixing of currents ● shallow water ● abundance of plankton 		

TIME: 80 minutes

RESOURCES: Characteristics of Areas for Good Fishing, SR 11
Across Canada: Resources and Regions, pp. 271-272, 284-286
 A student atlas

INSTRUCTIONAL
SUGGESTIONS:

1. You might like to review some of the names and locations of the items taught in the previous activity.
2. This activity will build on this review. You can tell the class that today's lesson will try to discover why the coastal areas are excellent fishing grounds.
3. Students can work on this individually or in groups, depending on your resources.
4. Distribute to each student a copy of the assignment Characteristics of Areas for Good Fishing, SR 11, or project it on an overhead. Have them read the questions and ask whether any need clarification.
5. Students then can work on the assignment.
6. When they have finished you should emphasize relationships between the physical setting and the resource - fish.

7. Further, clarify the concept of "location of industry" by showing that fishing is primarily dependent on a supply of fish. On the chart, 'close to raw material' and 'labour' would be marked 'V.I.'; 'power', 'transportation' and 'money' would be marked 'I'; and the rest would be 'U.I.'
8. To consolidate the ideas in this activity, ask the students to name a local primary industry, such as farming, mining, or forestry, and show how the local physical characteristics make the area appropriate for that industry. Refer to SR 11, #5, and enter the local industry beside the heading (FISHING). Then mark the important location factors that apply to it.

OUTCOMES:

When the lesson is completed, students should be able to state the factors which influence location of industries, and give specific reasons why the fishing industry is located where it is in Canada.

CHARACTERISTICS OF AREAS FOR GOOD FISHING

Read pages 271-272 of Across Canada: Resources and Regions.

1. Look at your maps of the east and west coasts of Canada and locate the ocean currents. Use your atlas to determine the origin of these three currents. Name the body of water each current comes from. Which currents are warm and which are cold? How can you tell? Indicate this on your maps with labels or colour.
2. Fog is a problem in the Atlantic region. In fact, it averages 120 days a year. What do you think is the cause of so much fog?
3. What is a continental shelf? Diagram a cross-section of the ocean floor from Newfoundland to the Grand Banks. How far off the Newfoundland coast are the Grand Banks?
4. Explain the factors making the Atlantic region waters excellent fishing grounds.
5. On pp. 284-286 of Across Canada: Resource and Regions, factors that affect the location of industries are discussed. Look at the chart below and check the factors that are important for fishing (put a 'V.I.' beside the very important factors, an 'I' beside the important ones and 'U.I.' beside those that are unimportant).

FISHING

Close to raw
material

Power

Labour

Transportation

Market

Money

Land & services

INQUIRY STEP III	ACTIVITY 8	Review of Types of Industry
FOCUS OF INQUIRY: What are the types of industries and how important are they?		
INTENT: Students will name the three types of industry (primary, secondary, and tertiary or service) and give examples related to the fishing industry.		

TIME: 40 minutes

RESOURCES: Across Canada: Resources and Regions, pp. 282-283

The Technology Connection: The Impact of Technology on Canada, p. 31.

Canada Year Book

Graph, SR 12

INSTRUCTIONAL
SUGGESTIONS:

1. Tell the students that you are going to give them a series of examples and that they have to decide what concept you are getting at. Write the following words on the board:
("yes" an example - "no" not an example)

fishing (yes)
banking (no)
mining (yes)
candy making (no)
2. Ask what the examples answered with a "yes" have in common. What are we getting at? Write your guess down; then volunteer it.
3. Add the following words:

restaurants (no)
trapping (yes)
real estate (no)
forestry (yes)
4. Can you guess what it is now? What are the common characteristics? What do we call this group? (primary industry)

5. Try this example:

cars (yes)
fish (no)
candy (yes)
education (no)

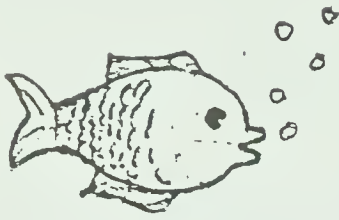
What are we getting at? Why?

6. Add the following:

trees (no)
lumber (yes)
wheat (no)
canned salmon (yes)

Repeat questions to develop the concept of secondary industry.

7. Do the same thing with tertiary (service) industries. Include positive examples such as mechanic, doctor, coast-guards-man, banker, etc. These could be contrasted with negative examples such as inshore fisherman, logger, auto worker, boat builder, farmer, etc. (By this time students may be able to create their own lists.)
8. Using pages 282-283 of Across Canada: Resources and Regions, the students could check the attributes of the types of industry. You might wish them to define and give examples of the three major categories of industry. Be sure that examples from fishing are included.
9. Using page 31 of The Technology Connection: The Impact of Technology on Canada students can compare the percent of people involved in each of the industries. Have them graph the 1975 data.
10. Using the Graph, SR 12, have the students:
 - a. list the industries in order of "most people employed" to "least people employed."
 - b. list the industries in order of "highest value" of goods and services produced to "least value".
 - c. have students compare the two lists to see what the relationship is between the number of people employed and the value of goods and services produced.
 - d. ask students to speculate as to why the primary industries have the least number of people employed and produce the least value of goods and services, even though primary industry is the basis for secondary and tertiary industry.



CHALLENGE ACTIVITY:

Have students use employment statistics in the Canada Year Book to find out why fishing is not specifically referred to on p. 31 of The Technology Connection: The Impact of Technology on Canada and on the Graph SR 12.

NOTE: Students should find the number of people employed in fishing is so small compared to other major primary industries that it is difficult to show fishing on a graph such as SR 12.

OUTCOMES:

At the conclusion of this activity students should:

1. be able to name the three types of industry;
2. give examples of each type from the fishing industry;
3. know the relative importance of each type.

GRAPH



Graph courtesy of Hosford Publishing Company, from Thinking About Ontario: A Hosford Study Atlas by Henry W. Castner et al, p. 106.

INQUIRY STEP III	ACTIVITY 9	Historical Aspects of the Fishing Industry
FOCUS OF INQUIRY: What were early reactions to Atlantic coast fish resources?		
INTENT: Students will learn that the fishing industry was the first industry to be established in Canada and that early voyages of discovery, such as those of John Cabot, were followed by fishing voyages to the waters off the east coast of North America.		

TIME: 40 minutes

RESOURCES: John Cabot's Voyages, SR 13

Fishing Industry Time Line, SR 14

INSTRUCTIONAL
SUGGESTIONS:

1. Discuss fishing in general terms, referring to how the industry began, where it began, and why.

e.g. Does anyone know where fishing began in Canada?
How long has there been a fishing industry in Canada?

List student responses on the chalk board.
2. After about five minutes of recorded discussion tell the students that they will be given a source to read to verify their responses. Distribute John Cabot's Voyages SR 13.
3. Give students the following questions and have them go over the readings. Students could be asked to record answers to these questions under the topic "History of Fishing".
 - a. What did John Cabot report about the supply of fish along the Atlantic Coast?
 - b. Examine the two photos in the handout. Compare the two, using headings such as buildings, boats, machinery.
 - c. Decide whether the second illustration is early or late twentieth century. What evidence do you have for your choice?

4. How much had the inshore cod fishery changed over 200 years according to these two photos? (Students should note very little change.)
5. Give students the Fishing Industry Time Line, SR 14 and tell them they will be completing it as they study the historical development of the fishing industry. Ask them to mark on the time line when Cabot came to Newfoundland.

OUTCOMES:

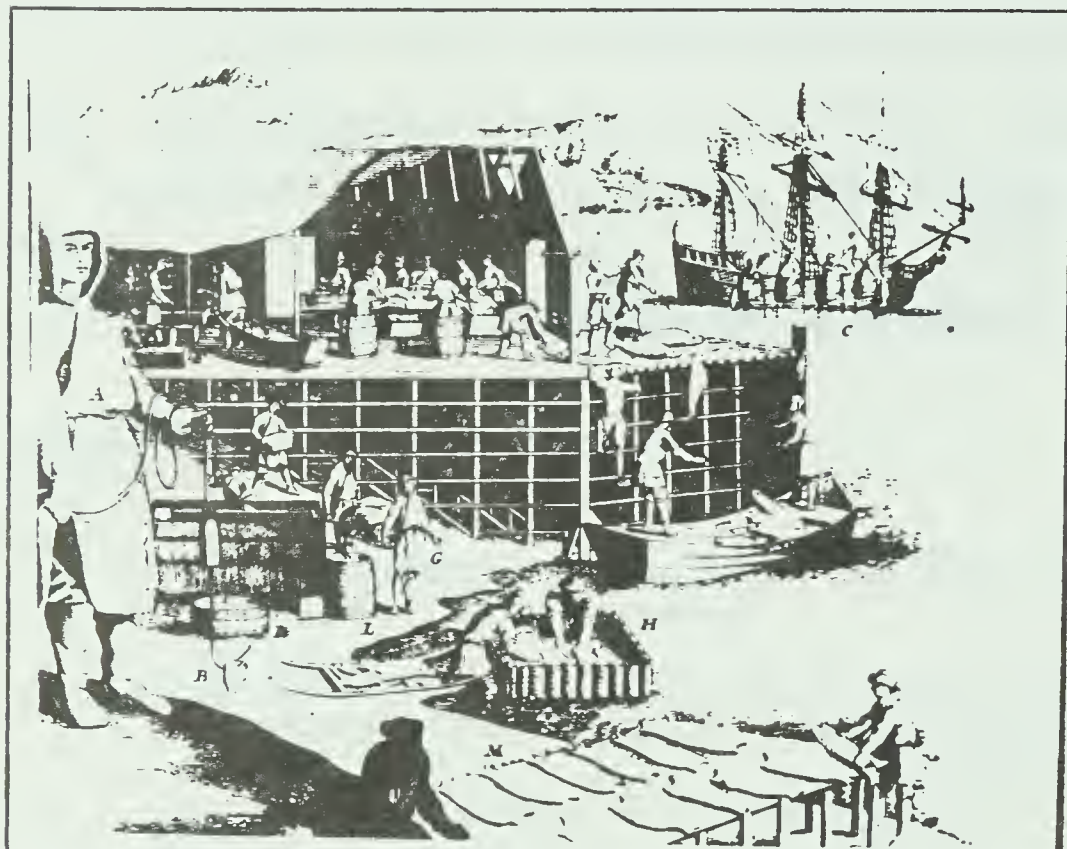
When this activity is finished students are expected to:

1. understand something of the early history of fishing;
2. add additional terms to their vocabulary list and begin to use them;
3. begin to conceive of the growth and change in the industry.

JOHN CABOT'S VOYAGES

A historical document tells us that in 1497 some merchants in Bristol, England sent a ship called the "Mathew" to explore the unknown west. John Cabot was the captain. The ship left on May 2, 1497, and on June 24 land was sighted (America). Other sources suggest that the voyage was actually in 1494. The following excerpt is part of a report written in 1565 about John Cabot's voyage.

...they gave the name First Land Seen (*Prima Terra Vista*), and to a large island which is near the said land they gave the name Saint John, because it had been discovered on the same day. The people of it are dressed in the skins of animals; they use in their wars bows and arrows, lances and darts, and certain clubs of wood, and slings. It is a very sterile land. There are in it many white bears, and very large stags like horses, and many other animals; and likewise there is infinite fish, and the greater number of them are called baccallaos (codfish); and likewise there are in the same land hawks black like crows, eagles, partridges, linnets, and many other birds of different kinds.

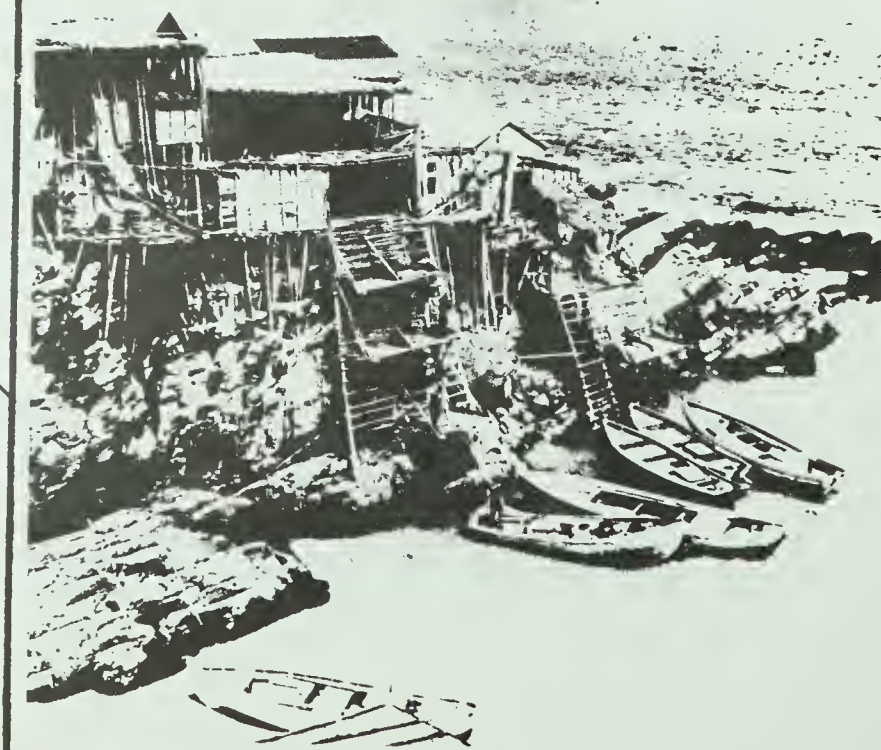


◀ The Newfoundland cod fishery, as depicted by Herman Moll about 1713

Photograph courtesy of the Public Archives of Canada, Ottawa, C-3686

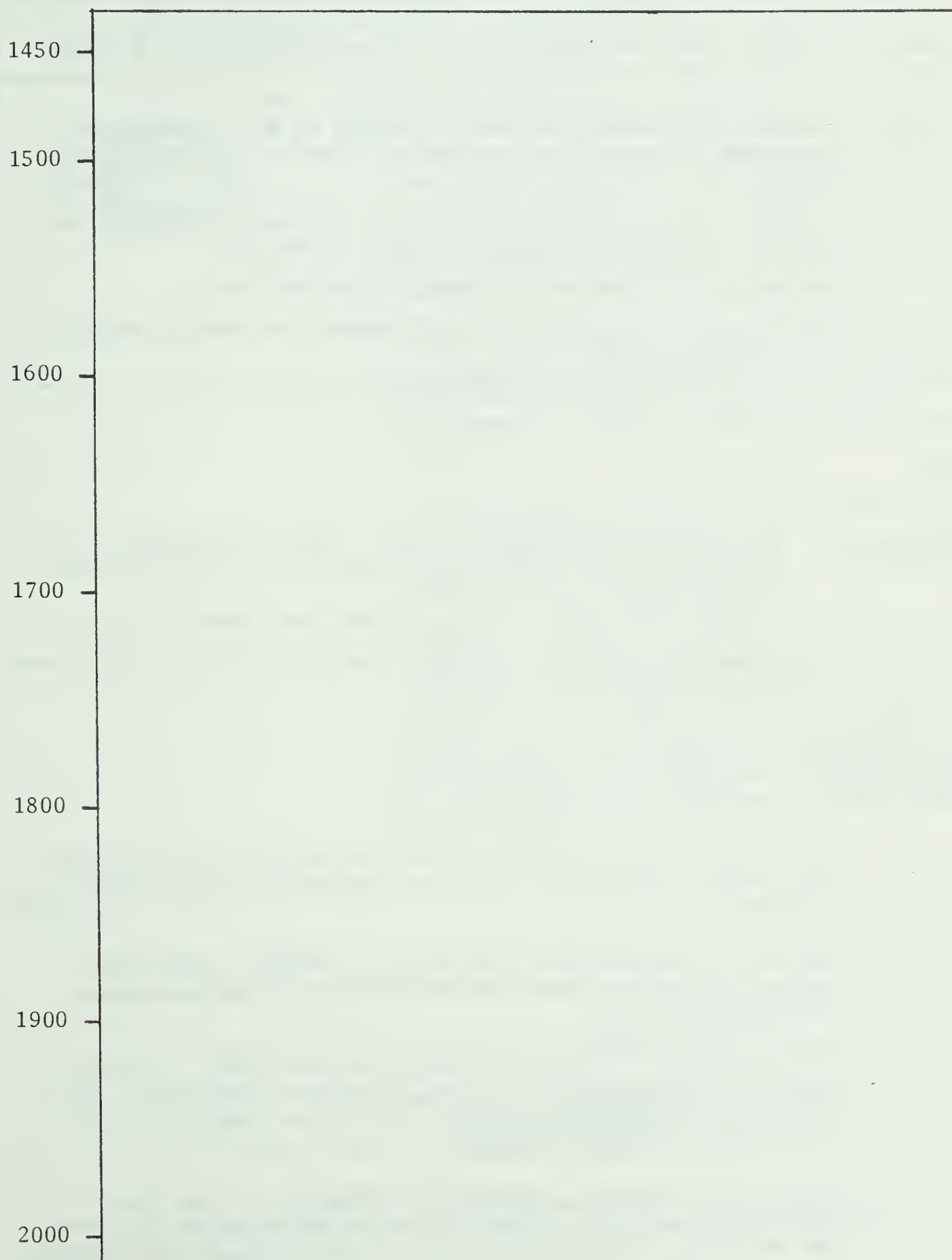
▶ Pouch Cove, Newfoundland, in the twentieth century

Photography courtesy of CN Rail



FISHING INDUSTRY TIME LINE

INDUSTRIAL DEVELOPMENT



INQUIRY STEP III	ACTIVITY 10	Fishing From the Schooner Dory
FOCUS OF INQUIRY: What technology was used in schooner dory fishing?		
<p>INTENT: Students will develop an understanding of the variety and sequences of activities involved in fishing by schooner dories.</p> <p>Students will appreciate the dangers and hardships involved in this method of fishing, now largely outmoded.</p> <p>Students will practise outlining/sequencing skills.</p> <p>Students will be prepared to understand the changes brought by new technologies.</p>		

TIME: 80 minutes

RESOURCES: The Technology Connection: The Impact of Technology on Canada, pp. 134 - 135, 139 - 143

Sequential Outline: Fishing From the Schooner Dory, SR 15

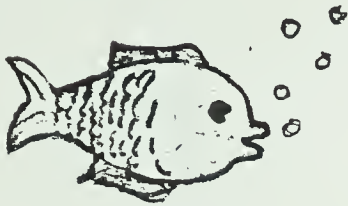
Sequential Outline: Fishing From the Schooner Dory, Answer Key

INSTRUCTIONAL SUGGESTIONS:

1. Have the students look at the ship on the back of a 10¢ coin. Tell them or ask them to tell you that this is the schooner "Bluenose".

Explain to students that they will be reading a detailed account of the many activities involved in a schooner dory fishing expedition.
2. Ask the students to read carefully pp. 139 - 143, "Fishing from the Schooner Dory", in The Technology Connection: The Impact of Technology on Canada. Invite any questions that the students may wish to ask.
3. After the discussion, present the handout SR 15 entitled "Sequential Outline: Fishing From The Schooner Dory". Note that an Answer Key, page 74, has been prepared for the teacher's use. Explain to the students that they will complete the outline. Allow the rest of the period to finish.

4. After completion of the outline, check answers for accuracy and understanding. Students might compare with each other.
5. Ask the students to mark on their time line the major period during which schooner dory fishing occurred.



CHALLENGE ACTIVITIES: (optional)

- A. Students might enjoy drawing an illustration for each phase of the fishing trip.
- B. Some students may be able to locate pictures of some of these activities of the fisherman's life to add to their personal folder.
- C. Find stories in the library that describe a fisherman's adventures on board a schooner. Have students report on them. Captain Courageous by Rudyard Kipling is one such story.
- D. Find out whether anyone in the community has at one time been a fisherman. If so, tape an interview to be played to the class or invite him/her to talk to the class.
- E. Students could research the "Bluenose" in a library or write to the Nova Scotia Department of Tourism for further details on schooners. Note that the "Polynesia" is a converted Grand Banks schooner now owned by Windjammer Cruises and sailing in the Caribbean. Students could get a brochure on Windjammer Cruises from a travel agent.

OUTCOMES:

At the conclusion of the activity, students should be able to:

1. understand the activities in schooner dory fishing;
2. appreciate the dangers and hardships in schooner dory fishing;
3. be able to make a sequential outline;
4. add new terms to the vocabulary list: grub, victuals, trawls, hooks, gaffs, gear, assembly line, "dressing" the fish, salters, lumpers.

SEQUENTIAL OUTLINE:

FISHING FROM THE SCHOONER DORY

A. Outfitting the schooner:

- 1.
- 2.
- 3.
- 4.

B. The trip to the fishing ground:

- 1.
- 2.
- 3.
- 4.

C. The dories go out to fish:

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

D. Ongoing activities on board the schooner:

- 1.
- 2.

E. The trip ends:

- 1.
- 2.
- 3.
- 4.

F. Difficulties and dangers of the schooner dory fisherman's life:

1. Weather changes
 - a.
 - b.
 - c.
2. Health
 - a.
 - b.
3. Large ships
 - a.
4. Living conditions
 - a.
 - b.
5. Working conditions
 - a.
 - b.

FISHING FROM THE SCHOONER DORY

- A. Outfitting the schooner:
 - 1. Schooners moved from winter moorings and refitted
 - 2. Provision of salt to preserve the catch
 - 3. Provisioning for "grub"
 - 4. Supplying herring for bait
- B. The trip to the fishing grounds:
 - 1. Leave harbour
 - 2. Stop off at St. Pierre for rum and tobacco
 - 3. On board preparation of trawls and lines
 - 4. Drawing of direction from the course bag
- C. The dories go out to fish:
 - 1. Equipment of the dories
 - 2. Rowing out from the schooner
 - 3. Setting out of trawls; guiding of buoys and trawls
 - 4. Rowing back to schooner for meal and waiting period
 - 5. Return to dory to haul in trawls
 - 6. Hauling in of trawls
 - 7. Dory moves continuously along trawl
- D. Ongoing activities on board the schooner
 - 1. Dressing the fish
 - 2. Washing and salting
- E. The trip ends:
 - 1. "Lumpers"
 - 2. Drying the fish
 - 3. Women's work and wages
 - 4. Storage
- F. Difficulties and dangers of the schooner dory fisherman's life:
 - 1. Weather changes
 - a. fog - unexpected and sudden
 - b. wind - drives dories far from schooner
 - c. large waves - swamp dories
 - 2. Health
 - a. ill on board, no doctor
 - b. inadequate diet
 - 3. Large ships
 - a. cut down dories
 - 4. Living conditions
 - a. cramped quarters
 - b. monotonous meals
 - 5. Working conditions
 - a. working at night to prepare baited hooks
 - b. light of oil torches created sooty conditions

INQUIRY STEP III	ACTIVITY 11	Historical Dramatization (optional)
FOCUS OF INQUIRY: What would it be like to be a schooner dory fisherman?		
INTENT: Students will participate in an original dramatization which will recreate the early schooner dory fishing method and through this mode of drama come to understand the lifestyle of these fishermen.		

TIME: 40 minutes

RESOURCES: Sequential Outline, SR 15 from Activity 10

INSTRUCTIONAL
SUGGESTIONS:

1. Use the Sequential Outline, SR 15 from Activity 10 as a basis for a personalized discussion of schooner dory fishing. The following questions could be asked to "set the scene":
 - a. How would you have felt at the beginning of the trip?
 - b. Why would you feel that way?
 - c. Would all the crew feel the same way?
 - d. What would you be the most excited about?
 - e. What would you be most apprehensive about?
2. Divide the class into five groups. Have each group choose one of the scenes and put together a short dramatization of this aspect of the fishing trip. In instructing the groups tell them that they are not expected to provide any elaborate props, simply dialogue and actions which relate to the various tasks to which the crew members must attend. To help them prepare, pose the following questions:
 - a. Who are you going to be?
 - b. What is your job?
 - c. Do you have a family waiting at home?
 - d. What are you wearing?
 - e. How do you feel now about your job? the voyage?

- f. What are each of you doing?
 - g. What will you say?
 - h. What is the weather like?
3. Present the skits in order when the students feel comfortable with their roles.
 4. If the students have trouble with their presentation, you could ask:
 - a. How could we improve this?
 - b. What do we need to change?
 - c. Should we add or drop anything?
 5. As a conclusion, you could ask:
 - a. Do you feel differently now about the life of a schooner dory fisherman? In what way?
 - b. Would you like to have been a fisherman on a schooner?

OUTCOMES:

Students will understand that fishing by schooner and dory involved careful preparation and hard work.

INQUIRY STEP III	ACTIVITY 12	Grand Bank - A Fishing Village
FOCUS OF INQUIRY: What differences in lifestyle are there between my community and a fishing village?		
<p>INTENT: Students will be able to identify and account for developments made in the fishing industry.</p> <p>Students will be able to provide examples of primary, secondary and tertiary industry related to the fishing industry.</p> <p>Students will identify differences and similarities between Grand Bank and their own community.</p> <p>Students will be able to generalize from the changes identified in the community of Grand Bank to the Atlantic region as a whole.</p>		

TIME: 40 minutes

RESOURCES: The Technology Connection: The Impact of Technology on Canada, pp. 134-138

A Comparison of Grand Bank and My Community, SR 16

A Comparison of Grand Bank and My Community, SR 16 Answer Key

INSTRUCTIONAL
SUGGESTIONS:

1. Explain to students that what they will be reading in this activity deals with a fishing village in Newfoundland called Grand Bank. Have students locate the following places (which will be dealt with in the reading) on a wall map of the Maritimes: Grand Bank, Burin Peninsula, and St. John's.
2. Write the following "guided reading" instructions on the board:
 - a. Place the following methods of fishing in order of their development:
 - stern trawler/dragger method
 - schooner dory method
 - side trawler method

- b. Did technology have a greater impact upon offshore or inshore fishing? Why?
- c. How does Grand Bank compare with your own community?

Have students read the questions.

3. Have students read silently pages 134-138 in The Technology Connection: The Impact of Technology on Canada, keeping in mind the guided reading questions. Students are not required to answer these questions in written form. However, they should be told that the answers to these questions will be used to fill in the comparison chart later in the activity.
4. Discuss answers to the questions. Use these questions as a lead into further discussion. Examples: Guided reading question a. - Why did these developments in fishing methods occur? Guided reading question b. - In what ways did technology affect offshore fishing? Inshore fishing?
5. Distribute A Comparison of Grand Bank and My Community SR 16 and review the concepts of primary, secondary, and tertiary (service) industries if necessary.
6. Use a transparency copy of A Comparison of Grand Bank and My Community, SR 16 as the class provides the information necessary to fill the chart. Students fill in their copies as the transparency is filled. Students are to use all the information to date to provide answers. An Answer Key is provided on page 81. Encourage students to give as many answers as possible.
7. Summarize the lesson by looking at your community and Grand Bank in terms of ideas related to materialism:
 - a. Would anyone starve in either community? (No, because of the welfare system in Canada; also community help.)
 - b. Who has the most leisure time? Why?
 - c. Who would be able to eat out more? Go on trips? Buy big cars? etc.
 - d. Who would enjoy their work the most?

NOTE: Value judgements as to which is the better lifestyle will probably be expressed by students. Note that one lifestyle is neither good nor bad in comparison to another, but a matter of personal choice.



CHALLENGE ACTIVITY:

Have students draw a poster or cartoon depicting the impact technological change had upon the community of Grand Bank.

OUTCOMES:

Students should be expected to:

1. name three developments made in the methods of fishing;
2. provide at least one example of each of primary, secondary, and tertiary industries related to fishing;
3. identify at least two similarities and two differences between their own community and Grand Bank.

SIMILARITIES:

- 1.
- 2.
- 3.
- 4.

DIFFERENCES:

- 1.
 - 2.
 - 3.
 - 4.
-

TYPES OF INDUSTRY WITH EXAMPLES FROM FISHING:

Primary

- 1.

Secondary

- 1.
- 2.

Tertiary (Services)

- 1.
 - 2.
 - 3.
-

TYPES OF INDUSTRY IN MY COMMUNITY:

Primary

- 1.

Secondary

- 1.
- 2.

Tertiary (Services)

- 1.
- 2.
- 3.

A COMPARISON OF
GRAND BANK AND MY COMMUNITY

ANSWER KEY

SIMILARITIES:

Answers will vary with
the community

DIFFERENCES:

Answers will vary with
the community

TYPES OF INDUSTRY WITH EXAMPLES FROM FISHING:

Primary

1. fishing

Secondary

1. fish packing plants
2. canneries

Tertiary (Services)

1. banking
 2. marine fuel dealer
 3. marine suppliers
-

TYPES OF INDUSTRY IN MY COMMUNITY

Primary

1. answers will vary

Secondary

1. answers will vary
2. answers will vary

Tertiary (Services)

1. answers will vary
2. answers will vary
3. answers will vary

INQUIRY STEP III	ACTIVITY 13	New Technology
FOCUS OF INQUIRY: What changes in technology have occurred in the fishing industry?		
<p>INTENT: To help students recognize how various technological changes contributed to the growth of the fishing industry.</p> <p>Lead students to discover when each new technology was introduced.</p>		

TIME: 80 minutes

RESOURCES: Fishing Industry Time Line, SR 14 (from Activity 9)

New Technology - Guide Sheet, SR 17

The Technology Connection: The Impact of Technology on Canada, pp. 135, 139-143, 147, 149-155

INSTRUCTIONAL
SUGGESTIONS:

1. Refer to the Fishing Industry Time Line SR 14 that the students have been keeping and indicate that they have shown the change from historical cod fishing to schooner dory fishing. They read in the last activity about side and stern trawlers.
2. Tell students that it will be necessary for them to do more reading in order to find out what each new technology really was, when it was introduced, and how it worked.
3. Divide the class into five groups to work at five stations.
4. Draw the students' attention to New Technology - Guide Sheet, SR 17, and explain the work to be done.
5. Each group will work at each station for approximately twenty minutes. Students desiring extra time may return to the station on their own time or finish the assignment as home-work. They will do all the questions in sections A, B, C and D. Section E is a challenge section. Students should be encouraged to attempt one question from this section.

6. Students will make notes on information gathered.
7. Students will file the notes in their special folder based on the unit.
8. Refer to SR 14, Fishing Industry Time Line. Have the students finish listing the methods of fishing beside the dates on the time line. You may wish to complete this with the class as a whole.

OUTCOMES:

At the end of this activity students should be able to tell how each technological change has affected the fishing industry. They should also be able to correctly place each technological change on the time line.

NEW TECHNOLOGY - GUIDE SHEET

A SAILING VESSELS:

1. Describe fishing operations in a sailing vessel. (1700 - 1850)
2. List two advantages of this operation.
3. List the main disadvantage of this operation.
4. What kind of effect do you think the use of sailing vessels had on the lifestyle of the fishermen?

Readings: The Technology Connection p. 139

B SCHOONER DORY:

1. What is a schooner dory?
2. During what period was it used?
3. Review the fishing operation from a schooner dory.
4. Identify and list the weaknesses and strengths of this method of fishing compared to sailing vessel methods.

Readings: The Technology Connection pp. 135, 139 - 143, 147

C SIDE TRAWLER:

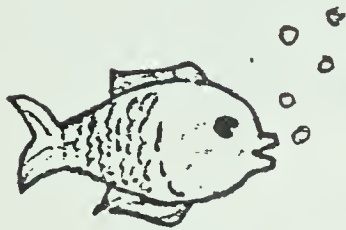
1. What is a side trawler?
2. What major technological change made trawler fishing possible?
3. List five changes in Grand Bank that occurred because of the introduction of trawler fishing.
4. What aspects of trawler fishing would you consider to be good or bad?

Readings: The Technology Connection pp. 135, 149 - 151

D THE STERN TRAWLER:

1. What is a stern trawler?
2. When was it introduced?
3. What changes in technology does it demonstrate?
4. What would it be like to work on a stern trawler compared to a schooner?

Readings: The Technology Connection pp. 135, 151-155



CHALLENGE ACTIVITY:

E. Make a diagram of one of the following:

1. a stern trawler;
2. what you would consider an ideal fishing vessel;
3. a schooner and dory.

INQUIRY STEP III	ACTIVITY 14	Operation Sell Fish
FOCUS OF INQUIRY: Where in Canada could fish consumption be increased?		
<p>INTENT: Students will analyze population distribution in Canada.</p> <p>Students will choose three cities as possible candidates for a marketing campaign.</p> <p>Students will make and defend decisions.</p>		

TIME: 80 to 120 minutes

RESOURCES: Atlas with a population map
Roles - Outline, SR 18
Role Cards, SR 19, Pages 1-3

INSTRUCTIONAL
SUGGESTIONS:

1. Set the stage for the simulation by telling students that they are members of a company committee which has been asked to choose three cities in Canada for an advertising campaign designed to boost fish consumption.
2. As background, state that population will have an obvious effect on how much fish is consumed. Then use the following figures from the 1981 census and a population map to see where Canadians live. (Note that Activity 5 also used these figures.)

British Columbia	- 2,744,467
Alberta	- 2,237,724
Saskatchewan	- 968,313
Manitoba	- 1,026,241
Ontario	- 8,625,107
Quebec	- 6,438,483
New Brunswick	- 696,403
Nova Scotia	- 847,442
Prince Edward Island	- 122,506
Newfoundland	- 567,681
Northwest Territories	- 45,741
Yukon	- 23,153

NOTE: When the students are working on their roles, you may have to clarify the difference between actual city and metropolitan populations. For example, the city population of Vancouver is 414,281 while the metropolitan population is 1,268,183. The city and metro population of Calgary are both 592,743 while Edmonton is 532,246 for city and 657,057 for metro. Census Canada has an exact definition of metropolitan areas, but an approxiamte one is the area which has the named city as the core and is defined by commuting distance around it.

3. State that the group has narrowed the choice of cities down to the following nine: Vancouver, Calgary, Edmonton, Saskatoon, Regina, Winnipeg, Toronto, Montreal or Halifax.
4. Either duplicate Roles - Outline, SR 18, or write the roles on the board.
5. Organize the class into groups of five and ask each student in the group to choose a different role. Students may change the name of their role to match their sex if they wish.
6. State that once a role has been chosen, the student's task is to:
 - a. collect a detailed role card, SR 19;
 - b. study the information on it;
 - c. make an individual choice of the three cities for the campaign;
 - d. be able to support the choice by integrating the information on the card into their own background.
7. Tell the president that he/she is chairperson of the group and will call the meeting to order once each member has reached an individual decision.
8. During the meeting each member presents his/her three choices in turn and defends them.
(Note that different members have different information.)
9. The group must reach a decision on which three cities to support. They could rank them first to third.
10. Once each group has reached its decisions, have one person from the group present and defend the choices. Other class members could ask for clarification or challenge statements.
11. When the discussion is complete, point out that you have looked at factors that influence an advertising campaign.
 - a. what were they?
 - b. are they the same as those that influence the location of primary industry?

12. Emphasize the effects of population distribution in Canada as a factor which may determine the location of manufacturing and service industries.



CHALLENGE ACTIVITY:

If students wish to pursue this activity, they can work out an advertising campaign. Art work, jingles, radio, T.V. and newspaper ads could be included.

OUTCOMES:

At the conclusion of this activity students should be able to:

1. state location factors for an advertising campaign;
2. state areas of largest population in Canada;
3. defend a group decision on both factual and attitudinal grounds.

ROLES - OUTLINE

JAMES MONROE is the president of Atlantic Seafoods and is concerned about developing new markets in Canada for fish products.

ANN JOHNSON is the advertising manager at Atlantic Seafoods and will be responsible for any major new advertising campaigns.

GILES BOUDREAU is the sales director and will follow-up the advertising campaign by selling to new customers such as supermarkets and fish stores.

PETER MCDONALD is the treasurer at the company and is concerned that the money invested in a sales and advertising campaign will be spent as effectively as possible.

JEAN PERELLI is a union representative who has been asked to take part to protect the interests of the workers.

JAMES MONROE - President of Atlantic Seafoods

As president you are concerned that your company is not selling enough fish to the rest of Canada. You know that you are working with a strong team of people who will make a sound decision. You are especially interested in selling in large cities, but you don't speak French. You also have a brother in Edmonton whom you would like to see more often. You don't tell the rest of the group about this, but it could influence your decision.

	Population (metro)	Business Grant from Provincial Government
Vancouver	1,268,183	No
Calgary	592,743	Yes
Edmonton	657,057	Yes
Regina	164,313	Yes
Saskatoon	154,210	Yes
Winnipeg	584,842	No
Toronto	2,998,947	No
Montreal	2,828,349	No
Halifax	277,727	No

ANN JOHNSON - Advertising Manager

You are concerned that your advertising costs not be too high. You would rather start with smaller cities, but not too small. You really think Toronto and Montreal are out of the question, but Vancouver might be an attractive place to work because of its scenery and climate.

	Population (metro)	Advertising Cost for $\frac{1}{4}$ page/day
Vancouver	1,268,183	\$ 2,573
Calgary	592,743	980
Edmonton	657,057	1,333
Regina	164,313	471
Saskatoon	154,210	446
Winnipeg	584,842	1,135
Toronto	2,998,947	3,782
Montreal	2,828,349	2,170
Halifax	277,727	818

GILES BOUDREAU - Sales Director

You are particularly interested in knowing how much fish people eat and what proportion of the total consists of cod fish. You know that your sales force can sell anywhere, but you would prefer to start in an area of low competition from the west coast fish. Further, you know that your connections in Montreal could help to increase sales there.

	Population (metro)	Fish Consumption kg/family/year	% Cod
Vancouver	1,268,183	17.9	31
Calgary	592,743	13.6	24
Edmonton	657,057	12.6	30
Regina	164,313	9.2	27
Saskatoon	154,210	8.9	27
Winnipeg	584,842	10.3	38
Toronto	2,998,947	16.7	54
Montreal	2,828,349	13.9	51
Halifax	277,727	17.0	47

PETER MCDONALD - Treasurer

You are not sure if this push for new markets is a good idea. You want to keep costs down. Halifax seems a good place to start as costs will be low. Vancouver is too costly from your point of view. The prairies may have some possibilities and besides, you have always wanted to go skiing in Banff.

	Population (metro)	Shipping Costs /100 kg.	Cost of Living
Vancouver	1,268,183	\$ 185	High
Calgary	592,743	169	High
Edmonton	657,057	169	High
Regina	164,313	148	Low
Saskatoon	154,210	148	Low
Winnipeg	584,842	150	Average
Toronto	2,998,947	97	High
Montreal	2,828,349	80	Average
Halifax	277,727	0	Low

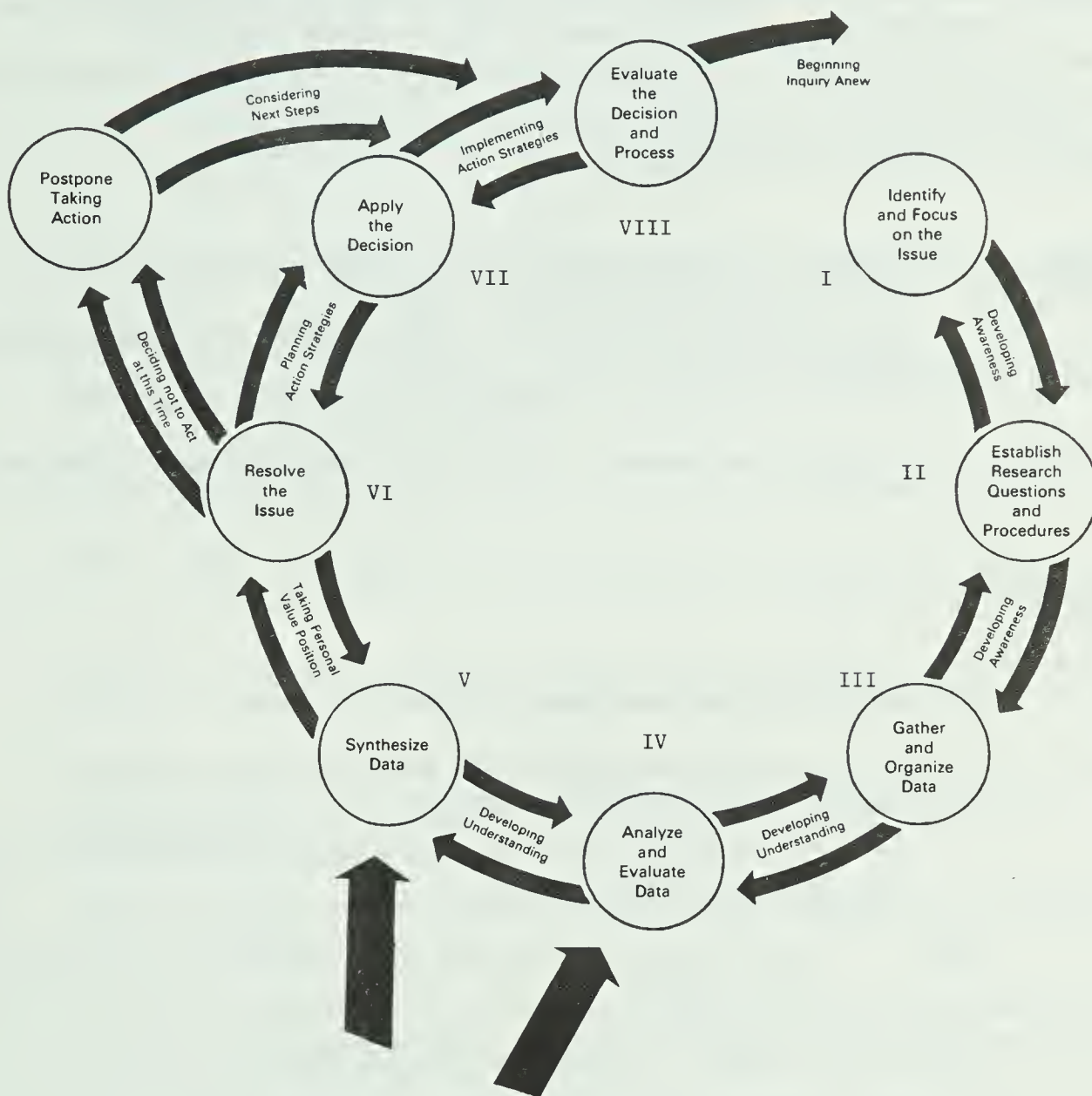
JEAN PERELLI - Union Representative

You are concerned that as much work as possible be done in the Halifax region. You would support Halifax. Also you feel that fellow workers in Vancouver could be asked to support increased fish consumption. You hope that as much fish as possible will be sold so that more of your union members can work.

	Population (metro)	Fish Consumption kg/family/year	% Cod
Vancouver	1,268,183	17.9	31
Calgary	592,743	18.6	24
Edmonton	657,057	12.6	30
Regina	164,313	9.2	27
Saskatoon	154,210	8.9	27
Winnipeg	584,842	10.3	38
Toronto	2,998,947	16.7	54
Montreal	2,828,349	13.9	51
Halifax	277,727	17.0	47

IV & V ANALYZE, EVALUATE, AND SYNTHESIZE DATA

WHAT IS THE IMPACT OF NEW TECHNOLOGIES ON COMMERCIAL FISHING?
WHAT ARE THE ATTEMPTS AT RESOLVING PROBLEMS? WHAT ARE THE METHODS
OF ASSURING FUTURE SUPPLIES OF FISH?



The series of activities which follows will give students an opportunity to investigate problems that have arisen due to the impact of technology on the fishing industry.

INQUIRY STEP IV & V	ACTIVITY 15	Unions and Credit
FOCUS OF INQUIRY: How have unions and credit affected lifestyles in the fishing industry?		
INTENT: To make the students aware of the impact change has had on the development of unions in the fishing industry.		

TIME: 40 - 80 minutes

RESOURCES: "Echoes from the boom heard across the Pacific", TR 3
The Technology Connection: The Impact of Technology on Canada, pp. 144 - 147, 157, 37 - 40
 "Fish Story (to be continued)", SR 20
 "Lobster in summer, cod in the fall, 'stamps' in winter", SR 21

INSTRUCTIONAL
SUGGESTIONS:

1. Read the following statement to the students:

"One B.C. captain made \$1.6 million from a single dripping net-load of herring."

(Excerpt "Echoes from the boom heard across the Pacific" - Maclean's, March 17, 1980.)

NOTE: This entire article has been printed as Teacher Resource TR 3, page 97.

2. Based on the quote, discuss the following:

- a. What image does this portray of a fisherman? Do you think that this would be an accurate description of the average fisherman? Why or why not?
- b. Compare this image with the image presented in the song "Make and Break Harbour" SR 1 studied in Activity 1.
- c. What other information about this particular captain do you need, to know if this image is applicable to him?

NOTE: At this point you may want to give the students more information from the article "Echoes from the boom heard across the Pacific" - Teacher Resource, TR 3.

3. Distribute copies of The Technology Connection: The Impact of Technology on Canada and have students read pp. 144-147 on the credit system.
4. Have students answer the following questions in their notebooks.
 - a. What are the advantages of this system? the disadvantages?
 - b. What alternatives were open to fishermen before this system was introduced?

NOTE: Hopefully students will come up with the alternative of forming unions or joining together to form fishermen's co-operatives. If not, you may have to introduce this topic.

5. Discuss what a union is and the reasons for forming one, especially in the case of fishermen. Explain the function of a co-operative.
6. Have students read page 157 in The Technology Connection: The Impact of Technology on Canada.
7. Distribute handout "Fish Story (to be continued)", SR 20 and read it with the students.

NOTE: The reading level of this article is high. You may wish to read it to the class as they follow.

8. From the article, summarize information on the blackboard regarding unions. Have students copy this in their notebooks.
9. To see how unions came about in other industries refer the students to pp. 37-40 in The Technology Connection: The Impact of Technology on Canada.
10. Compare labour unions in Canada with those previously studied on the Soviet Union.
11. Discuss the image of a fisherman as presented in this article. How does this compare with the image students had of the captain at the beginning of this lesson?
12. Distribute handout "Lobster in summer, cod in the fall, 'stamps' in winter", SR 21. Have students read the article.
13. Discuss:
 - a. What problems do there seem to be in a fisherman's life?
 - b. What are the "good" things about his life?
 - c. Why doesn't he take another job in another part of Canada?

14. Have students make a chart in their notebooks on "Fishing as an Occupation". The chart should look like this:

<u>Fishing as an Occupation</u>	
Advantages	Disadvantages

15. Ask if the fisherman has a high standard of living. Would the inshore fisherman or the offshore fisherman have a higher standard of living? How does their standard of living compare to ours?

OUTCOMES:

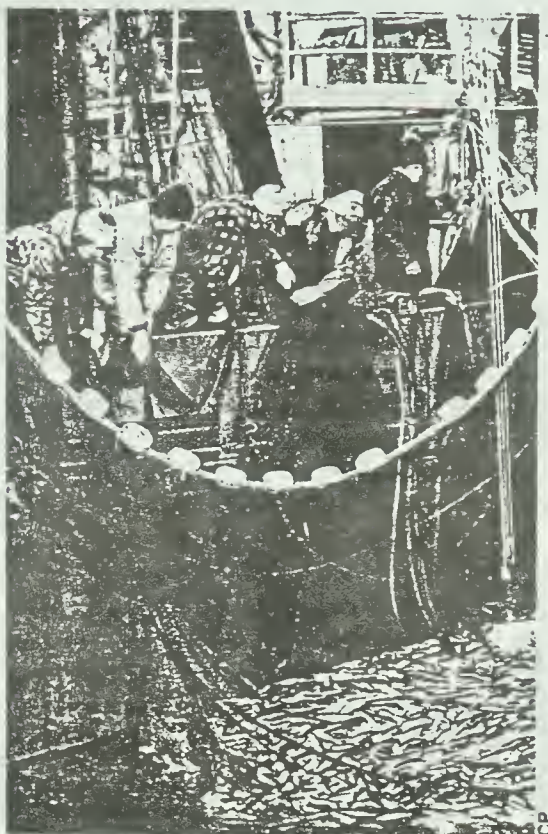
At the conclusion of the activity students should be able to:

1. state the advantages of a cooperative approach to economic uncertainty (i.e. unions, cooperatives);
2. state the advantages and disadvantages at being a fisherman.

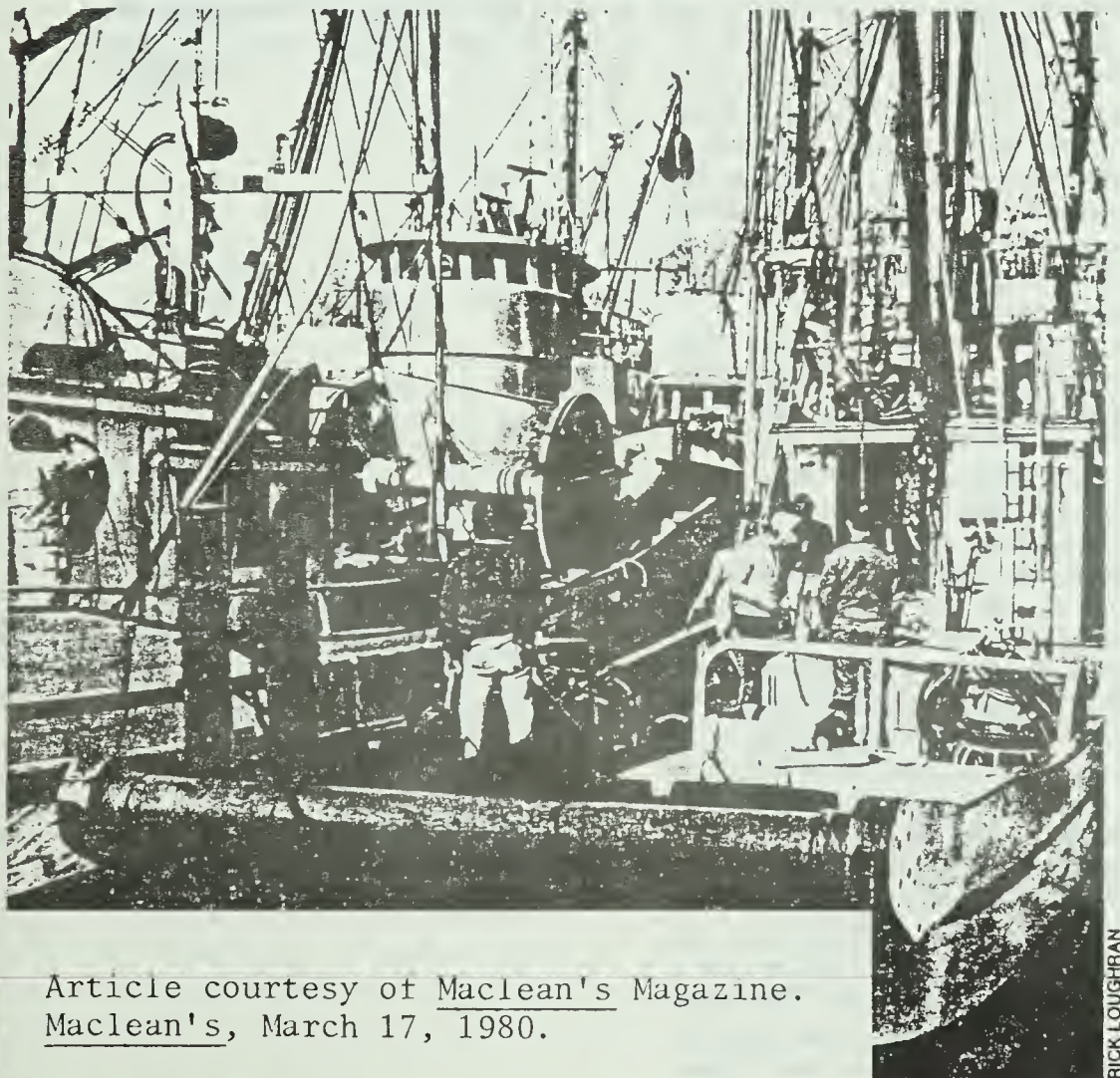
Echoes from the boom heard across the Pacific

Haunting the corridors of the Fishermen's Inn Hotel in the tiny B.C. coastal village of Shearwater one year ago were two broad-shouldered bodyguards. In the room behind them was a suitcase containing \$1 million. In cash. The nervous man carrying it was a B.C. fish-company representative and he was using it to buy boat-holds-full of silver, six-inch herring from B.C. fishermen. The payload—a thumb-sized plug of golden eggs, or roe—is so beloved of Japanese gourmands that last year the search for it launched a six-week Wild West herring rodeo that involved 1,550 fishing boats, and pumped almost \$150 million into B.C.'s economy, triple the loot of the year before. One B.C. captain made \$1.6 million from a single, dripping net-load of herring.

Like most bubbles, however, B.C.'s herring roe miasma appears to have burst. The fishery, which began again last week, has been hit by the double whammy of depleted fish stocks and a consumer revolt in Japan. Last year's frantic bidding war for herring, which



Vancouver herring boats in port (below); and at work: Wild West herring roe rodeo



Article courtesy of Maclean's Magazine.
Maclean's, March 17, 1980.

saw companies literally throwing money at fishermen for their catches, drove prices up to as much as \$5,000 a ton, a tariff that sent the cost of crunchy, processed roe called *kazunoko* spiralling to \$40 a pound for Tokyo housewives. The result is that almost 40 per cent of last year's supply of 7,600 tons of roe is still gathering dust on suppliers' shelves. That collapse is partially responsible for the bankruptcy of the Japanese marine products company Hokusho and Co., one of the largest in that country's corporate history. "It was a typical Japanese business phenomenon," says Jerry Spitz, president of the Fisheries Association of B.C. "They tried to test the consumers' mettle."

Meanwhile in Vancouver, Jack Nichol, president of the United Fishermen and Allied Workers Union, says: "It was a price war created by the big Japanese companies to force the little guys out of the business." Nor is Nichol inclined to buy current moans of the fish companies that last year's losses and market collapse should lower prices to fishermen for herring caught this year. He intends to bargain with the fish companies for \$3,500 a ton for the fish caught by the small gill-net boats, and \$2,100 a ton for those caught by larger seiners. Last year's minimum figures were \$1,200 and \$650 respectively. B.C. fishing companies say there is no market to justify higher prices, and have offered \$650 a ton for gill-net-caught herring and \$315 a ton for seiners. In response, 700 B.C. fishermen, represented by the United Fishermen and Allied Workers Union and the Native Brotherhood of B.C., voted last week to hang up their nets until their prices were met. Canadian fish processors point to January's 4,000-ton herring fishery off San Francisco, where no new Japanese buyers showed up. And the federal department of fisheries has predicted that this year's catch will be 35,000 tons, down eight tons from last year — a reduction due to overfishing in the past, department spokesmen say.

Japanese importers of Canadian herring, which supplies some 57 per cent of the delicacy for the Japanese market, are "bloody nervous," according to Spitz. So is the federal department of fisheries which, in light of the lower catch expected, has restricted the West Coast's 1,300 gill-netters to one net per boat, instead of the two nets permitted last year.

Clearly, the halcyon days of last winter, when the larger B.C. fishing boats earned an average of \$324,000 each in the roe race, are gone. "The best thing we can do for the B.C. herring fishery," says Eric Kremer, general manager of the Central Native Fishermen's Co-Op, "is forget 1979 ever happened."

Thomas Hopkins

ACTIVITY 15

solidarity meeting, "We've got it won," even though as of Thursday it wasn't quite—not yet.

Cashin, a peppery St. John's lawyer and former MP, has been head of the Newfoundland Fishermen Food and Allied Workers Union since the early 1970s, when they first dared ask for the unheard-of right to bargain collectively. But it was not until this summer that the inshore fishermen took up their strike option on a large scale. In the annual spring negotiations they were faced with price offers from the 21 ma-

Ltd., which controls 40 per cent of the industry. Third party in the negotiations, the government must end the threat to the industry that accounts for one-sixth of Newfoundland's gross domestic product—doubling its catch since 1974 and tripling product value to half a billion dollars. So it was with evident relief that, 24 hours after the solidarity rally ended, Deputy Fisheries Minister and strike mediator Gordon Slade announced an interim agreement had been reached that would send the inshore fishing fleet to sea again and unlock most fish-plant doors immediately. On Saturday, processors were to

DICK GREEN

Strikers on patrol: 'We've got it won'



Newfoundland

Fish story (to be continued)

Even the union's own guesstimates of an average inshore fisherman's net income—\$9,000 after working full-time for the seven or eight fair-weather months of 1979—sounded high to many of the thousand baymen who converged on St. John's for a solidarity rally last Thursday. Sam Anthony from Grates Cove, for example, recorded the highest catch in his Trinity Bay community last year, grossing \$10,000—but that was down to \$6,000 by the time he made payments on his boat and covered the cost of repairs to his engine and whale damage to his nets. No more than any of the others can he afford to be on strike, but also, like the 12,000 others who were still out after five belt-tightening weeks, Anthony says: "I can't afford not to be."

About 15,000 fish-plant workers have also been unemployed, laid off when the inshore men decided to stop selling their catch to the island's 77 processing firms without an 11-per-cent increase in prices, and the provincial economy was being bled by a million dollars a day. Although "a lot of people are hurting," said fisherman Kevin Condon of Calvert, "we knew in the beginning it was going to be tough. It is the only way we are going to change the system." That was the spirit that emboldened union leader Richard Cashin to tell his

major processing companies belonging to the Fisheries Association of Newfoundland and Labrador (FANL) that, the union says, would reduce their already uncovertable incomes to below 1978 levels. After the 22,000-strong union, which represents almost the entire catching and processing work force, declared "no sale" to two plants, FANL retaliated with a province-wide lockout of its other 75 plants, shutting down the industry overnight.

What made Cashin so bullish was Premier Brian Peckford's announcement earlier last week of a royal commission into practically every aspect of the industry, including powers to study well-guarded company balance sheets. The commission's immediate brief was to recommend 1980 prices, with 60 days in which to do so. The two months' study time was a concession to the complexity of it all: 50 prices for various species and sizes (most important, cod and turbot; most disputed, squid).

To both sides the basic issue is simple. The companies predict bankruptcies if they have to pay more. Prices have dropped in the U.S., destination for 85 per cent of the Newfoundland product, so the prices offered fishermen are lower than 1979's by a cent or two a pound (unchanged for cod). The union insists that without an 11-per-cent increase there will be widespread repossession of boats, and has even called for the nationalization of Fishery Products

begin paying prices slightly better than those in FANL's last offer of mid-June, pending the commission's bringing forward a final settlement in mid-October.

Geoff Hunt

Article courtesy of
Maclean's Magazine.
Maclean's, September 1, 1980.

Lobster in summer, cod in the fall, 'stamps' in winter

WHEN A ROPE tangles the prop and you've got to lie stripped to the waist in the bilges, your arm in the icy water up to the shoulder, in order to hack it free, enthusiasm for fishing may momentarily pall.

As it does sometimes when you've hauled 300, 50-pound traps over the side and collected barely enough lobster to pay for your gas, or when a three-day blow wrecks two thirds of your sets.

It gets in the blood though, the East Coast fishermen claim as they explain their way of life. Prince Edward Island's lobster fishermen begin their day in that sticky-eyed, pre-dawn glimmer, when the bark and cough of the big-bore car engines that power their boats rattles around a hundred harbors. The small boats butt against an in-racing tide heading for the lobster grounds half a mile from shore where thousands of multicolored buoys mark the sets of traps.

Another day

The helper soon hooks the first buoy aboard with a three-foot gaff and the winch squeals as the traps are dragged from the shallow waters of the bay. The orange-green lobsters they contain are transferred to a holding tank or, if they're too small, tossed back for another day. With a flourish of speed and an eye to the other buoys, the skipper lines the boat up and the freshly baited traps splash overboard to await tomorrow.

Ronnie Campbell, a Cove Head lobsterman, started fishing 11 years ago with an old double-ender. His current boat, the 46-foot Morning Mist II cost \$11,000 (\$25,000-\$30,000 at today's prices). He wonders how the younger generation is going to make out.

Campbell says he makes about 90% of his income, which he's leery about pinning down, from fishing - lobster in May and June, cod and hake in the fall. In between, the money comes from tourists who rent his boat for deep-sea fishing and from the lobster pound and snack bar at Cove Head harbor he runs with his wife. Unemployment insurance and his wife's part-time job as a nurse see them through the winter.

He has an average-size house, a 1978 Chevy pickup and a 1976 Austin Mini, likes to "buy new" when he can but adds, "Few fishermen have got money in the bank at the end of the year. It only happened to me once." Chatting in the wheelhouse of Morning Mist reveals opinions and ideas that you would just as likely hear in the cab of a truck in Quebec, an Ontario office or on a Prairie farm.

The price of lobster, of course, is a prime subject, particularly as it's down 30¢ a pound compared to last year. Campbell feels lobstermen must get together to present a united front on the prices processors pay for their catch.

"We've had the short end of the stick for too long," he says. "The companies set the price, and we should know what that price is before we go out, so we can decide if we want to fish or not."

He adds that fisherman must put their share in by better handling of the catch. "If you do your job right then you have the right to demand better prices."

Despite low prices, rising costs and the uncertainties of wind and sea, Campbell wouldn't trade his lifestyle. "It can be pretty damn miserable out here and sometimes you really question yourself, but most of the time it's fine and you really enjoy your work."

By Robert English, The Financial Post, August 2, 1980, p. S9.
Article reprinted courtesy of The Financial Post.

INQUIRY STEP IV & V	ACTIVITY 16	320 Kilometre (200 mile) Limit
FOCUS OF INQUIRY: How has Canada protected our supply of fish from depletion?		
INTENT: To make the students aware that the Canadian government has established a 320 km. zone to protect coastal fisheries.		

TIME: 80 minutes

RESOURCES: "Tangled Nets Off Newfoundland", SR 22, pages 1-3.
 "Widening the net", SR 23
 "Fishing industry nets a harvest of problems", SR 24
 "The 320 Kilometre (200 mile) Limit", SR 25
The Technology Connection: The Impact of Technology on Canada, p. 157
Across Canada: Resources and Regions, p. 276

INSTRUCTIONAL
SUGGESTIONS:

1. Reproduce the three articles listed below or any more recent articles that you may be aware of. Make 10 copies of each. Place two copies of each in five large envelopes.
 - a. "Tangled Nets Off Newfoundland" (SR 22)
 - b. "Widening the net" (SR 23)
 - c. "Fishing industry nets a harvest of problems" (SR 24)
(Students to focus on paragraphs 5, 6, 7 for this activity.)
2. Explain to the class that they will spend two periods looking at an attempt to try to solve the problems of the fishing industry.
3. Hand out to the students a copy of the question sheet entitled "The 320 Kilometre (200 mile) Limit", SR 25. Indicate to students that they will work in groups of five. In their groups, students should have the envelope of articles (SR22, SR 23 and SR 24) you have prepared and the texts The Technological Connection: The Impact of Technology on Canada and Across Canada: Resources and Regions as reference materials. Groups can work on the first eight questions of SR 25 cooperatively. When they have completed this and you have checked their work, they can work on question nine individually.

4. The newspaper articles may be collected and evaluated. You might be looking for the students' understanding of this topic. Any comments which may have been written on the back of the articles could be posted on the bulletin board for all to see.



CHALLENGE ACTIVITIES:

- A. As an extension, students may wish to write a "letter to the editor" on the subject of the 320 kilometre zone. They could represent fishermen from a foreign nation (Portugal) who have fished the coastal waters for years, or they could represent Canadian fishermen.
- B. Some students might like to prepare a role play between a Canadian fisheries officer and the captain of a foreign trawler fishing in Canadian waters.

OUTCOMES:

When this activity is finished students should be able to state:

1. the problems which necessitated the imposition of a 320 kilometre limit;
2. the conditions involved with the limit;
3. the continuing problems not solved by the fishing zone.

who gets what — and *how* to get it.

While trawlers range far out to sea, Newfoundland's inshore fishermen wait for the fish to come to them. Then, using boats and gear of limited range and mobility, they trawl or set up anchored nets to harvest the ocean's riches. Proudly and defiantly old-fashioned, they cling to what they know, resisting change for fear of losing what little they possess. For political motives, the Newfoundland government backs the fishermen — thus, say its critics, providing disguised welfare to the province's 800 outports.

The federal government, flush with its success against foreign ships, and plumping for methods that would turn the inshore fishery into a major industry, backs the big processing companies in their pressure for change. But, while Ottawa controls the proportion of the inshore to offshore fishery, this conflicts with the Newfoundland government, which can regulate only processing. The main issue concerns the northern codfish found off the east coasts of Newfoundland and Labrador. The province wants 85 percent of the total cod catch to be taken by inshore fishermen; the federal government about 65 percent.

While Canadians wrangle over the inshore fishery, their reputation for evenhanded enforcement on the 200-mile limit grows day by day. Out on the Grand Banks, the hemisphere's richest fishing ground, the Canadian performance is superb.

The Banks, a plateau 350 kilo-

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returns, names, numbers and vessels' positions will be sent by telex to a computer in St. John's called FLASH (Fishery Licensing Surveillance Hierarchy). Copilot Bob Sen-lac tunes in the VHF the skippers use. Grinning, he reports: "They're swearing at us in Spanish, Portuguese and Russian."

• Observer John Kelland, lone Canadian in a French trawler licensed to fish in Canadian waters, painstakingly counts the 1879 cod in one haul, weighs a sample ten percent, then shows the captain that the catch he recorded as only 1000 kilograms in fact weighed 3006. Kelland radios for a patrol ship to escort the trawler into St. John's. Its catch over eight days is calculated as 340 tonnes, not 136 as the captain reported. He is fined \$5000.

Codfish Conflict. Such relentless policing of foreign vessels — in a part of the Atlantic as big as Ontario and Manitoba combined — has helped regenerate fish stocks that had been virtually wiped out before Canada extended her fishing zone to 200 sea miles on January 1, 1977. The Canadian catch of Atlantic finfish, down to 700,000 tonnes in 1978, was back to one million tonnes by 1980 and is expected to be more than two million tonnes by the end of the 1980s.

Ironically, though, there's little sign of the bonanza that the 200-mile limit was supposed to bring to Newfoundland, where governments, processors and fishermen fight over

A Canadian Forces aircraft swings low over two foreign trawlers fishing off Newfoundland

Tangled Nets Off Newfoundland

By rigidly policing our territorial waters, we've got foreign fish-pirates under control off the coast of Newfoundland — yet there's now *less* opportunity for the inshore fishermen

BY JOHN DYSON

FOUR burly figures in a tiny rubber boat emerge out of the fog and pull alongside a rusty Portuguese ship gillnetting for cod at the center of the Grand Banks of Newfoundland. They're from the Canadian patrol ship *Cape Roger*, which lies a mile astern watching by radar. Surprised Portuguese seamen lower a rope ladder and two men go aboard. "Good morning," says

Wilson Kettle, "we are Canadian fishery officers. We will check your license, then inspect your nets and your catch."

• Captain Michel Denis dives his Canadian Forces twin-engine Tracker down close to sea level and, banking steeply, counts 32 foreign trawlers working in pairs along the Tail of the Banks, just outside the 200-mile limit. When the aircraft

PHOTO: CANADIAN FORCES

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metres by 520, is only some 60 metres beneath the waves. On and around this submarine prairie, rich in minerals and salts, are unimaginable masses of plankton — and in 1980 some 15 percent of Canada's entire fish resources. Most importantly there is cod — the "beef of the sea" that has been a staple food in Europe for nearly 500 years.

"Barefaced Robbery." After World War II, hungry nations came to plunder the Grand Banks. In addition to the usual "bankers" from France, Spain and Portugal, as well as the United States and Canada, came ships from the Soviet Union, Japan, Romania, Poland, Bulgaria, East and West Germany, Denmark, Iceland, Norway, Britain and Italy — not schooners whose crews handfished from small dories, but "gang-fishing" factory trawlers. Some ships stayed on the Banks for two years or more and off-loaded fish and crew by freighters. With the territorial limit only 3 miles (increased to 12 miles in 1964), there were whole fleets of foreign ships in the bays of Newfoundland. Captain Denis once observed 110 Soviet trawlers in an area only 12 kilometres square.

So abundant were the fish that at first there was no alarm. But after peaking at 1.4 million tonnes in 1968, the cod catch crashed to a mere 400,000 tonnes ten years later. Had dock was almost wiped out, and vast schools of tiny capelin, vital food for cod, were fished to virtually nothing.

Canada closed her Atlantic ports

to Soviet trawlers, and warned Spain against disregarding quotas set by international agreement. It was a half-hearted stab at saving the fishery. But these nations went right on fishing — and building ships. "Every second vessel used small-mesh nets to prevent the escape of young fish," says Derek Barrett, Newfoundland supervisor of offshore surveillance for the federal government. "Some countries over-ran quotas by 300 to 400 percent. It was barefaced robbery."

But the fiercest days of the pirates were numbered. The United Nations Law of the Sea Conference in the early 1970s recognized that fish stocks should be managed by coastal states. Accordingly, on the first day of 1977, Canada declared its exclusive right to manage and exploit the waters extending 200 sea miles from her coast.

None too soon. Rebuilding was imperative. Although Canada's own fishing industry was on its knees, Ottawa imposed rigid conservation controls. Fishermen were prevented from overexploiting the recovering fish stocks by fishery officers who closely monitored their catches. Over three years, \$200 million in federal funds staved off bankruptcy of the industry.

The reward has been spectacular. Trawlers that caught barely 10 tonnes of northern cod a day in 1978 were hauling in up to 50 tonnes by 1981. Some vessels netted 36 tonnes in one 40-minute haul. Inshore cod, once about 300,000 tonnes — and

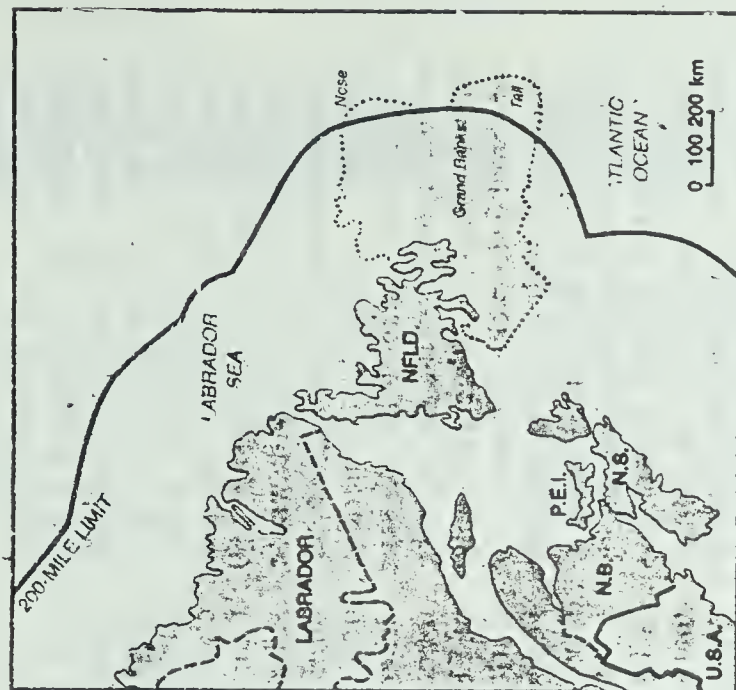
critical to the economy of some 800 Newfoundland outports — dropped to a frightening low of only 34,000 tonnes in 1974. It is recovering fast and should regain its former abundance by the late 1980s.

Drama Aplenty. Canada is obliged by international law to respect certain traditional rights and to make surplus stocks available to foreigners, but the invisible and storm-wracked 200-mile frontier must be under constant surveillance to prevent cheating.

Nowhere is piracy more tempting than on the Nose and the Tail, where the Grand Banks bulges into international waters. Here, in summer, the cod rises to the shallow top of the Banks and the shelter of Canadian conservation. In winter, retreating to deeper international waters, it is taken by trawlers of many nations.

Foreign ships straying into Canadian waters along the Nose and the Tail are among the targets in a \$20-million-a-year operation that has built the federal department of fisheries and oceans into one of Canada's largest enforcement agencies. There are several lines of defense against raiders:

- Aircraft make daily six-hour patrols, reporting the position of every ship at least once a week.



Map shows how Canada's 200-mile limit protects the Grand Banks fishery

- Six patrol ships operate out of Halifax and St. John's. Fishery officers try to board and inspect all foreign ships and one half of all Canadian ships every month.

- Three quarters of foreign vessels and a quarter of Canadian ships carry observers who live with the crew and record every haul.

Despite the military flavor of surveillance operations — gray patrol ships, surprise inspections at dawn, aerial photography at night with infrared cameras — this is a war, not of chases and broadsides, but of numbers, quotas and licenses. Nobody's armed, yet there is high-seas drama aplenty.

To board a rocking, rolling trawler takes the nerve of a windjammer hand going aloft. Fishery officer

Wilson Kettle once misjudged the roll of a Soviet ship, was plunged into the Atlantic and dragged along the ship's side.

For an observer, spending up to 60 days at sea in a foreign ship whose crew members speak no English can be difficult and lonely. "Generally, you're treated like a king," says Tony Dunne, "but the days can be monotonous when it's capelin soup for breakfast, pickled capelin for lunch and capelin with cabbage for dinner." In a Soviet ship, says Howard Sheppard, "you're alone among 120 Russians, friendly but always testing you."

Textbook Example. Most violations are by captains falsifying records. With salted cod bringing \$5000 a tonne in Europe, and much more on the black market, fraud is tempting. Canadian policy, says Art May, assistant deputy minister, Atlantic Fisheries, is to justify the slogan that crime doesn't pay. Of 610 vessels inspected in 1981, officers brought cases against 6 (3 Canadian) and issued 6 warnings.

Despite the bitterness of some nations, Canada's discipline of foreign fleets has won envy and admiration. "It is a textbook example of firm and sympathetic management of fish resources," says Capt. J.C.E. Cardoso, executive secretary of the Northwest Atlantic Fisheries Organization (NAFO). But for all its accomplishment internationally, Canada has failed to sort out its own fishing industry.

In 1977, after many lean years,

inventory. Norway and Iceland had the edge in Europe because of preferential tariffs, and in the United States due to currency fluctuation.

Then, throughout the summer of 1981, Newfoundland was surrounded by a freak band of cold water that barred the shoreward migration of the cod — and the inshore fishery was a washout. Fishermen who earn scarcely \$7000 in a good year made much less.

Fish Glut. Good years and bad, a fundamental problem is the very structure of the industry. Without fishing, the outports would be stripped of people; therefore the Newfoundland government is deeply committed to supporting the inshore fishermen who, using less sophisticated boats and gear, mostly take the cod during or just after spawning when it is in poor condition. Handled under the summer sun, the ungutted fish deteriorate further.

Adding to the problem is the mixed blessing of unemployment insurance, based on average earnings over a minimum of ten weeks. Fishermen see benefits drastically reduced if they extend the season, so many work the best ten weeks of the season, and then stop. The resultant glut of fish ensures rock-bottom prices in a market that prefers fish filleted and frozen within minutes of coming out of the sea, as on factory trawlers — which are used by most of Canada's competitors but remain banned by Ottawa to protect fish-plant jobs.

The Newfoundland government maintains that outport-fishermen should be allowed to harvest 85 per cent of the inshore northern cod. But the province's major fishing companies, backed by federal authorities, see this at best as a means of distributing social welfare, at worst as a policy that encourages outdated and inefficient methods. The processing companies would like to see more trawler fishing, because trawlers land bigger catches and work longer seasons in offshore water, which would also allow fish plants to stay operating longer each year.

Says Bill Wells, president of the Fisheries Association of Newfoundland and Labrador Ltd., representing 26 processing companies: "Instead of creating a soundly structured fishing industry, Canada is dividing the available resources among more and more people who are actually producing less."

Besides rationalizing the numbers of fishermen and fish plants, regulating the harvest and bringing order to marketing, there is a desperate need for a change of attitude. How can the industry prosper when the catch is controlled by Ottawa, processing by St. John's — and each government has different priorities?

The bounty of the Grand Banks is too valuable to waste through conflict and wrangling. Only rationalization, incentive and mutual trust will reap the full harvest. Otherwise, Canada may as well hoist the white flag of surrender to the foreign fish pirates awaiting their chance. □

fishermen geared up for the better days promised by the 200-mile limit. The Newfoundland government declared: "The sea will be to Newfoundland what the oil fields are to Alberta." Within three years, the lure of Grand Banks' gold nearly doubled the number of licensed fishermen — to 38,000. The Newfoundland government made loans of \$10,000 a man to help them get started. Banks and companies invested heavily. Fish plants in Newfoundland jumped from 81 in 1973 to 217 in 1981.

The result: too much effort by too many fishermen on too few fish. Fish plants are busy, but many operate for less than half the year. The 1979 catch, which brought a record \$156 million, was spread so thinly that most fishermen barely made ends meet. In 1980 came a strike and a lockout, and in 1981 a chaotic mixture of economic and natural problems.

With fishing so good that the entire 1981 offshore northern codfish quota was landed in two months instead of four, plants went on double shift, then quickly shut down or cut production drastically. Although trawler companies repeatedly stress the importance of an ordered, year-round operation, they typically resisted government attempts to slow them down.

But that was not all. Because of high interest rates, U.S. companies that normally buy more than 70 percent of Canadian fish cut back leaving Canada with a huge unsold

FISHERIES● To protect our dwindling fish stocks, we now control fishing in an

Widening the net

by NIX WADDEN

FOR ANY STUDENT of the history of Canadian fisheries, New Year's Day, 1977, will be a milestone date. This was when Canadian ownership of fish stocks 200 miles out to sea became a reality. What comes next? Is the big bonanza for Canadian fisheries now within grasp?

Canadian Fisheries and Marine Service spokesmen emphasize that January 1, 1977 must be seen not simply as the turning point in the downhill slide of large sectors of the Canadian fishing industry, but the beginning of a challenge. Jurisdiction gives Canada the opportunity to rebuild the fisheries — particularly the devastated Atlantic fisheries. The stocks can be rebuilt but this does not guarantee that the industry will recover. The Atlantic groundfish industry, for instance, has taken so much punishment that rebuilding of the stocks alone will not restore it to health. From trawler decks to marketing offices, the industry needs a major overhaul and the job will have to be done by industry and government working together.

TOO MUCH FISHING

The problems of the Atlantic groundfish industry began in the mid-1950s when foreign fleets put in their first appearance in what is now the Canadian fishing zone. Up to then although the industry had its hangups and limitations it was economically sound. The traditional hunting grounds on the Grand Banks and their abundant groundfish stocks were then being exploited, some close to the limits of safe conservation even then, by Canada, U.S. and half a dozen western European nations.

With world population increasing, land crops failing in some areas and fish protein available for the taking in waters that no one owned, it was hardly surprising that nations looked at the Canadian Atlantic fishing grounds.

Fisheries experts, Canadian and otherwise, could see the threat: a resource of limited size was about to come under an assault which would have no limits short of extinction of the stocks. Clearly, some kind of regulation was needed. Shortly before the onslaught began, the countries fishing these waters made an attempt at control by forming an international management organization — ICNAF — the International Commission for the Northwest Atlantic Fisheries.

In spite of the heroic control efforts of ICNAF, the situation deteriorated. The fleets multiplied from half a million tons

in the late '50s to 2.7 million tons in 1974, and catches soared spectacularly. Attracted by the groundfish (cod, redfish, flounder and others) bonanza, more boats joined the fleet, more sophisticated equipment was used, more processing plants were built. The Canadian industry, ashore and afloat, expanded along with the others.

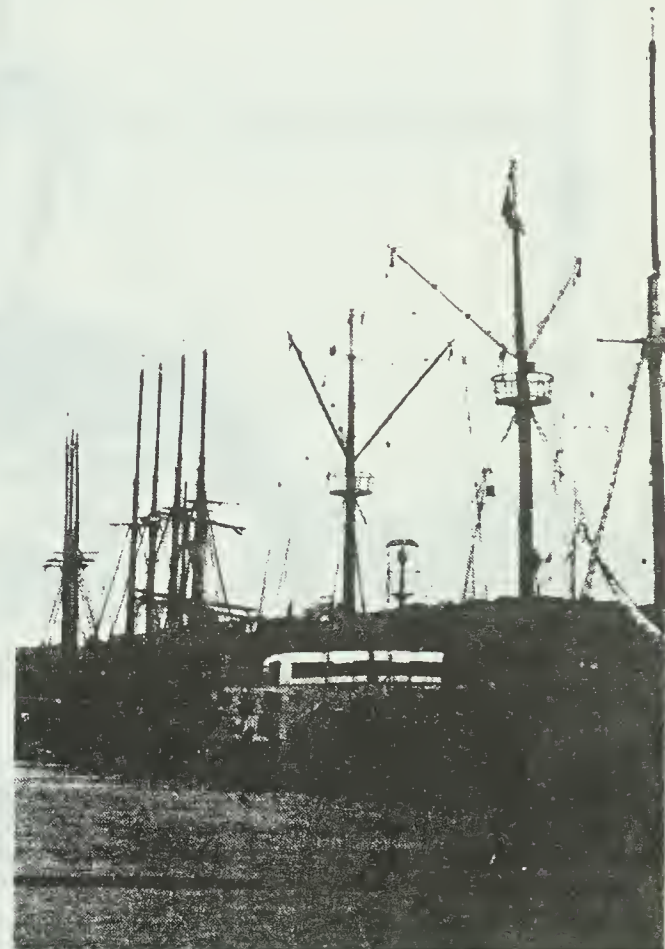
The atmosphere of those times was that of a sea-going Gold Rush complete with boom-town optimism and recklessness about tomorrow. Fish production peaked at 3.92 million metric tons in 1968. From that point it was clear that the palmy days were over; although the fishing nations actually stepped up their efforts, catches declined. By 1974, Atlantic groundfish stocks were in a state of near-ruin, as were important sectors of the Canadian fishing industry — stranded high and dry with unused plant space, unemployed fishermen and boats tied up at the dock. Just to keep the industry afloat, the federal government was forced to divert \$130 million for assistance to the fisheries — this in addition to routine annual payments of more than \$200 million by federal and provincial governments.

THE 200-MILE LIMIT

ICNAF's inability to prevent the disaster made Canada's extension of jurisdiction inevitable. Similar crises elsewhere were leading other nations to 200-mile decisions. At the current Law of the Sea Conference sessions which began in 1974 at Caracas, it became clear that the 200-mile fishing limit was an idea whose time had come.

Canada had hoped to establish its 200-mile zone in the setting of a general Law of the Sea Treaty. But by mid-1976 agreement was still not within reach and the plight of the Atlantic groundfish stocks was desperate. Canada decided to act.

To pave its journey to a 200-mile limit, Canada negotiated one-to-one agreements with the foreign nations responsible for most of the fishing off its coasts: Norway, the USSR, Poland, Spain and Portugal. In every case these agreements recognized Canada's ownership and management rights over the stocks in the zone. This amounted to an extension of 188 miles beyond Canada's 12-mile Territorial Sea (a ribbon of water in which the nation has almost as complete sovereignty as on land). Within these additional 188 miles, Canada's jurisdiction is confined at present to the fisheries.



Portuguese fishing boats in St. John's before the 200-mile limit. Canada and other coastal states are now pressing for the right to control the marine environment and scientific research in the 200-mile zone.

MAKING JURISDICTION STICK

Canada's first priority has been to develop the capacity to manage this new national asset. The zone encompasses, exclusive of the Arctic, 630,000 nautical square miles. Thanks to the reach of aerial reconnaissance it will be possible to guard this frontier effectively. Although the total zone area seems forbiddingly vast, effective policing means guarding specific fishing grounds whose total area is only 200,000 to 300,000 square miles — and only parts of these need be watched at any given season of the year. Carried out by Canadian Armed Forces aircraft, the air patrol is backed at sea by ships of Fisheries and Marine Service, National Defence and the Department of Transport.

From now on, foreign vessels that want to fish in the zone must apply to Ottawa for a licence. Entering or leaving the zone, boats must report by radio to Canadian authorities, and at least once a week they must report their positions and their catches. They are subject to on-board inspections by patrol vessels (in 1976 there were 900 boardings). They

area 200 miles off our coast.



can be ordered into Canadian ports for dockside inspections and they are subject to large fines for violations.

NO INSTANT JACKPOT

What the 200-mile limit will *not* mean is the immediate return of good times for Canadian fishermen. The stocks need years to rebuild. In 1977, total allowable catches of groundfish are actually about 30 per cent below those of 1976. Most of this cut will be absorbed by the foreign fleets.

Meanwhile, the Canadian share of this smaller harvest will increase — from 35 to 71 per cent in the first year of the zone. In 1977 some stocks, including most of those off Nova Scotia, will be fished exclusively by Canadians for the first time in years. Foreign fishermen are only allowed to catch fish surplus to Canada's requirements, and Canadian fishermen will be strictly regulated as well.

Fisheries authorities say it will take at least ten years — perhaps 15 — to rebuild cod stocks, for instance to 85 per cent of their peak levels of the past, although improvements should be noticeable within five years.

Rebuilding the stocks must be accompanied by a vigorous rebuilding of the industry and also by a permanent end to free-for-all fishing. History has shown (as in the case of the Great Lakes fisheries) that national jurisdiction does

Salmon catch in B.C. The Law of the Sea Conference recognizes that salmon-spawning countries like Canada have a primary responsibility for stocks, and that fishing should be confined, in most cases, to the area of the coastal state's fisheries jurisdiction.

not guarantee good management of fish stocks.

OTHER INDUSTRY PROBLEMS

The industry is in urgent need of an overhaul. Some of its present problems stem directly from overfishing but others have deeper causes. Last year the Fisheries and Marine Service published its analysis of these problems. A blueprint of measures it proposes to put the industry back on the road to prosperity called the Fisheries Rehabilitation Program was also announced.

Overcapacity in both fishing and processing, caused by the boom years, is one of the major problems. Among the domestic measures proposed in the Rehabilitation Program are; controls on the number of vessels allowed to fish the 200-mile zone, allocation of resources among various fleets, the encouragement of Canadian fishermen to go after stocks they had passed up before, and plans to cut down on overcapacity and awkward location of plant, many of which are now inconveniently and

expensively far from landing points.

Canadian fish quality needs to improve, too, if it is to compete successfully with foreign output. Up to now, say authorities, one problem has been that in many cases Canadian fishermen were not paid anything extra for better quality, and the Program included measures to provide these incentives.

There will also be programs aimed at cutting waste. Many of the fish now being caught and thrown back could find a market, if not in Canada, then in export markets.

Fisheries Minister Romeo LeBlanc makes it clear that none of these measures, and others in the Program, adds up to nationalization of the industry. "Government will simply be stepping in with some basic groundrules and some supporting action that cannot possibly be done by the private sector. Given these measures we expect that the fishing industry of Canada will feel, for the first time in many years, the floor of prosperity under its feet."

The setting of the limit at 200 miles does most, but not all, that Canadian authorities think needs doing on the east coast. The limit encloses some 90 per cent of the fish stocks that matter most to Canada.

On the Pacific coast the 200-mile limit takes care of all but one major Canadian concern. The exception is the salmon which spawns in rivers as far inland as 400 miles. It then leaves the 200-mile frontier far behind during its life at sea, and can be caught by foreign fishing fleets on the high seas.

Given wise management, the zone could become one of Canada's most valuable areas. The nation could rise from third largest exporter of fish in the world to first — and from 17th in total fish catch to the top six. "The industry has had to be supported during the years of overfishing and fisheries anarchy" says LeBlanc. "It can now look forward to being self-sufficient and stable — it can be a positive contributor to total Canadian prosperity. A time of great opportunity is upon us."

SUGGESTED ACTIVITIES:

1. On a map of North America draw a line marking the limit of the 200-mile zone. What conflicts with France, Denmark and the United States can you see?
2. Fishing agreements are an example of international negotiations that have worked well. Why do you think this is?
3. Write a story entitled "One Day in the Life of a Canadian Fisherman."

Nix Wadden is Assistant Director of the Information Branch of Fisheries and Marine Service.

Fishing industry nets a harvest of problems

By Catherine Gourley

VANCOUVER

THE BRITISH COLUMBIAN fishing industry, which last year reveled in Midas-like fortunes, is now struggling with disenchanted markets, diminishing stocks and widespread greed.

Rarely a dull business, the industry has taken on added interest this year, beset by some of the hottest controversies in its history. Besides predictable market changes, it has had to cope with a series of political wrangles.

First and perhaps nastiest is the ongoing fight between the provincial Ministry of Forestry and the federal Fisheries Department.

Their natural animosities blew up when federal Fisheries authorities arrested loggers working in the Queen Charlotte Islands on a site that had been approved by the B.C. Forest Service. Some heavy union lobbying resulted in heated phone calls between Victoria and Ottawa and charges were dropped.

The international disputes continue as well. Both Canada and the U.S. have seized and laid charges in court against boats drifting out of their home waters into foreign territory.

The problem of American fishermen chasing albacore tuna into West Coast waters this summer erupted into a full-scale international crisis that dragged in Ottawa and Washington representatives.

The Canadian argument is that the 200-mile limit includes jurisdiction over tuna, a stand the U.S. disputes. Its refusal to recognize the Canadian boundary resulted in the arrest of 19 skippers last summer.

DISAPPOINTING SEASON

It may be that the flare-ups are coming now because of the fishermen's disappointment in the season so far, even though some of the more astute prophesied trouble a year ago.

The first indication that the bubble might burst came in mid-1979 when the Japanese, whose hunger for herring roe is the sole inspiration for the B.C. industry, decided British Columbians were asking too much for it.

That left a number of B.C. processors with tons of roe whose price, doubled from the previous year, they could never recoup. Almost every company that dealt in roe took a loss with it last year, including the giant Mitsubishi, and especially Canadian Fishing Co., which sold off most of its B.C. assets recently.

When it came to this spring's roe price negotiations, both sides dug in their heels, ending in a deadlock as the brief herring period came and went.

According to the federal Fisheries Department, B.C. fishermen brought in 7,781 metric tons of herring last spring, compared with 43,465 the year before.

With that possible bonanza blown, fishermen began looking to the summer's salmon season to make a profit. But it, too, is turning out to be less than record-breaking.

Salmon, which provide 59% of the industry's total revenues (\$294 million last year), appear in five species in West Coast waters. This year, however, their various cycles (Sockeye, four years, Chinook, five years) are hitting ebbs simultaneously.

"These are all poor cycle years and when poor cycles coincide, you get a bad year for the fisherman," a federal Fisheries official says. The dip from last year, when fishermen brought in 57.7 million pounds of salmon, is part of an expected downturn.

The fishing industry, with revenues of \$1 billion and the province's fourth most important sector, can look to continued declines, the officials say.

They are worried enough about the lack of fish this summer to have closed some favorite fishing grounds of the commercial and recreational fishermen.

There are just too many fishermen, most of them armed with the most efficient equipment available, looking for too few fish. The number of sports fishermen alone has soared to 400,000, found mostly in the crucial Georgia Strait and Fraser River estuary.

The most alarmist predictions point to salmon shortages within 10 years, if the over-capitalized, over-fishing tradition continues.

But others say less bountiful times will bring the numbers back into balance by squeezing out the less successful operators. Provided stocks are sufficiently controlled, the various salmon stocks should surge again, each according to its biological timetable.

Aware that even nature cannot totally compensate for over-fishing, however, the federal and provincial authorities are persevering in their goal to double the numbers of B.C. salmon by the year 2000.

British Columbia's fishery, which now accounts for less than a third of the country's total, holds immense potential, if it can continue to tap the burgeoning Japanese market.

Article courtesy of The Financial Post,
August 30, 1980, p. 8.

THE 320 KILOMETRE (200 MILE) LIMIT

Work on the first eight questions in your groups. Number 9 is to be done individually.

1. What is the 320 km (200 mile) limit? When did it come into effect?
2. Draw the 320 kilometre limit on your maps of the east and west coasts of Canada.
3. Why was it necessary to move from a 22 km (12 mile) limit to a 320 km (200 mile) limit?
4. If fisheries decline, who suffers? Make a list.
5. What problems do you see in attempting to patrol this area?
6. List the types of technology involved in enforcing the 320 km zone.
7. The articles indicate that a number of problems still remain even with the expanded limit. What are they? Do you see any conflicts with France, Denmark and the United States? Why do the different countries take the positions they do in the conflicts? What might be solutions to some of these problems?
8. What is ICNAF? What does it try to do? Is it successful?
9. Write a newspaper article on the 320 km limit. In it you might explain the problems that it solves, what it is, and the recent effects it has had on the fishing industry. You can use the east or west coast fisheries as a basis for the story. Don't forget to include a "catchy" title.

SAMPLE STUDENT WORK FOR SR 25

The 320-Kilometre Limit

1. The 320 km (200 mile) limit is the Canadian fishing boundary on the east and west coasts. It is used to enable Canada's fishing stocks to recover because they were being exploited by foreign fishing fleets. The 320-kilometre boundary came into effect New Year's Day 1977.
2. _____
3. It was necessary to move the 22 km (12 mile) limit to 320 km because more and more foreign fishing fleets were coming to the area and catching large amounts of fish—depleting Canada's supply.
4. If fisheries decline, the people who would suffer would be: 1. fisherman; 2. fisheries themselves; 3. countries that export the fish; 4. foreign ships that fish in the area; 5. the markets.
5. The problems I see in trying to patrol this area would be that it would be difficult to get enough people to cover such a vast area. If you use radar equipment, it would be expensive and there would be problems in actually stopping foreign ships or ships that are taking more than the amount regulated by fisheries.
6. The types of technology involved in enforcing the 320 km limit (or zone) would be patrol boats equipped with radar that also do regular checks on boats, and possible use of airplanes or helicopters.
7. Problems that still remain with the expanded fishing limit are:
 1. Many fish plants are placed inconveniently and expensively far from landing points.
 2. Many fishermen are not being paid extra for better quality.
 3. Problems in controlling the number of vessels allowed to fish within the boundaries.
 4. Many fish being caught are thrown back—an unnecessary waste.
 5. There is a threat to the salmon fisheries—that Japanese vessels catch the salmon before they return to their spawning grounds along the coast.
8. ICNAF (International Commission for the Northwest Atlantic Fisheries) is an international management organization that is trying to control and regulate the number of fish being caught. So far they have not been very successful because of the increasing expansion of both foreign and Canadian fishing fleets and fishing plants.

Linda Sikorski

9. Conflicts

On January 1 of 1977, Canada set out a 320 km limit on its east and west coasts to prevent foreign vessels from cashing in on Canada's major industry. Ever since this limit has been set out, Canada has had conflicts with many countries such as Japan and the U.S.A.

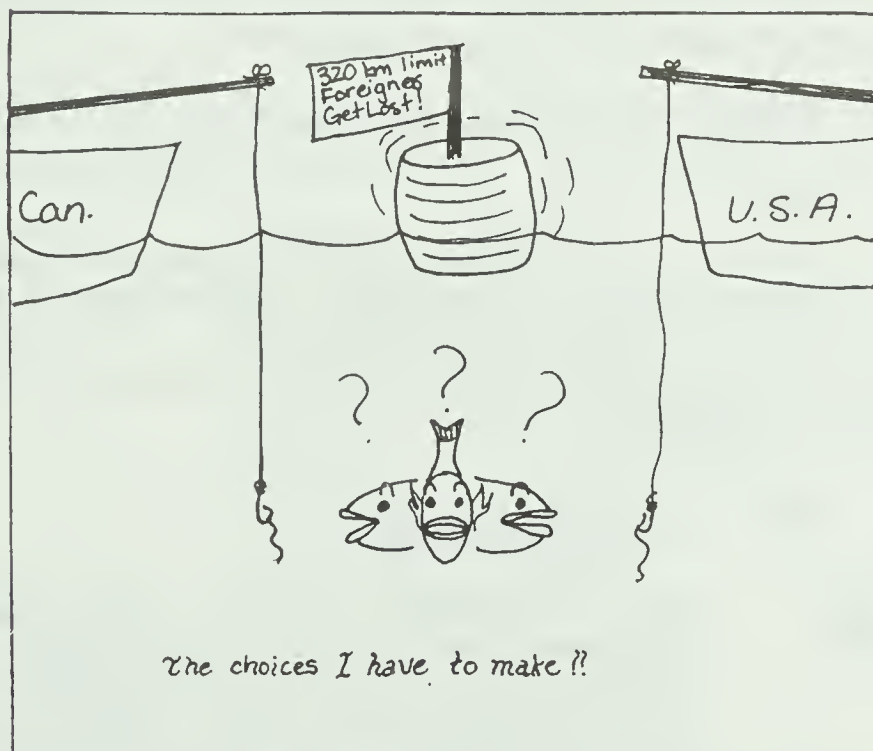
What is the use of the 320 km limit? Why do we really need it? The purpose of the 320 km limit is to prevent fishing from foreigners. Canada has decided to make its ownership on its waters known and to put its foot (or fin) down to overfishing. Because of the 320 km limit, Canada is hoping to restore the fish to great numbers again and to bring in a better income. The "fish flare" has spread throughout the world and Canada's fish population has declined sharply because of foreign fishing vessels which have overfished. Canada found it necessary to extend its 22 km limit 298 km more to prevent its fish from becoming extinct.

To enforce the 320 km limit, the government has set out airforce and naval defence which includes radar and buoys. Serious consequences are laid out for those who choose to violate the 320 km limit. From the U.S.A. alone, 19 skippers have been arrested. A fine and impounding of a vessel are also included in the charge against foreign fishing. To fish in Canada, vessels must own a license and are subject to inspections of vessels and catch and must report how much is caught if it is a foreign vessel.

The ICNAF has tried to control the amount of fish which is being caught, but fleets of ships have doubled their catch. This is one of the major reasons Canada has for setting up the 320 km limit. This has made Canada's fishing border necessary.

With hope, Canada's fish may increase in number because of the 320 km limit and possibly conflicts which may arise will be settled by narrowing the 320 km limit or allowing minimum fishing from foreign vessels.

Yet, even with the new 320 km limit, inshore fishermen face problems of having the offshore fishermen catching all of the fish towards the outskirts of the limit. More offshore vessels are being sent out, more are being caught, and there is less for other fishermen. Will Canada have conflicts within its own country when it has enough problems dealing with foreigners? What about the prairie provinces who may feel deprived of a good income? These, and other questions can only be answered with time. In the meantime, enjoy your McDonald Fillet O'Fish while you can.



Eleusis Wong

INQUIRY STEP IV & V	ACTIVITY 17	Sonar Fishing
FOCUS OF INQUIRY: What effect has the use of sonar had on commercial and sport fishing?		
INTENT: To develop awareness of the impact of sonar technology on the fishing industry.		

TIME: 40 - 80 minutes

RESOURCES: "Space-Age Fishing", SR 26, pages 1-3

Word Search, SR 27 Directions and Puzzle

Word Search, SR 27 Answer Key

INSTRUCTIONAL
SUGGESTIONS:

1. Discuss the following questions orally with the class.
 - a. Have you ever gone fishing?
 - b. If you have ever gone fishing, what kind of equipment did you use?
 - c. What types of fish did you catch?
2. Have the students brainstorm some ways that they could improve their next fishing trip. Write these on the board as students suggest ideas.

NOTE: Attempt to have students put forward some technological advances such as better bait, better reels, motors, etc.
3. Discuss some of the differences between "sport fishing" and "commercial fishing".



CHALLENGE ACTIVITY:

Have the students design a sport fishing boat and equipment that would increase their chances of catching fish. They may do this in small groups and describe their design verbally to the remainder of the class or they may draw their designs individually and present them. Have students discuss the advantages and disadvantages of the various designs.

4. Distribute handout SR 26 entitled "Space-Age Fishing". Ask students to circle examples of technology that are shown in the picture.

5. Give the students time to read the article.

NOTE: You may wish to read the article to the students.

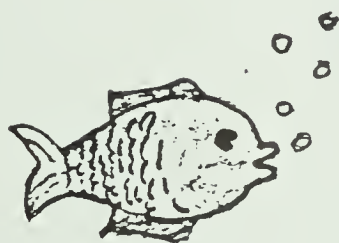
6. Discuss the article by asking the following questions:
 - a. What is sonar and how does it work for fishing?
 - b. What are the advantages of using sonar in sport fishing?
 - c. What are the disadvantages of using sonar?
 - d. What impact does the introduction of this technology have on fishing as a sport? Sample answer might be: The use of sonar removes the thrill of sport fishing.
7. Review with students the information that they have already covered on the various fishing vessels in use in commercial fishing and explain that sonar is used on some of these to locate schools of fish.
8. Have the students write a short essay on "The Impact of Sonar as a Technological Advance on the Fishing Industry".

A question they may consider answering is:

What impact could this have on the supply of fish?

(NOTE: You may wish to use this essay as an evaluation.)

Review with the class the techniques of essay writing.



CHALLENGE ACTIVITY:

For students who finish early, you might offer the Word Search, SR 27. It might also be given to the class as a change of pace. Students who find this activity easy might be encouraged to make up a puzzle of their own. It could then be shared with the class. (Please note that an Answer Key follows).

OUTCOMES:

When this activity is finished, students should be able to state how sonar technology has affected the sport fishing industry and how it has affected commercial fishing in Canada.

Sonar Fishing

- b. a. Explain what sonar is and how it works for fishing.
- b. What are the advantages of using sonar in sport fishing?
- c. What are the disadvantages of using sonar?
- d. What impact does the introduction of this technology have on fishing as a sport?
 - i. Developed in 1930, and first used for finding submarines, Sonar Sound for Navigational Research shows where the fish are, and it uses sound waves, transmitters, and receivers to find the fish.
 - ii. The advantages are - able to find the fish easy. They are ideal for canoes because they are small. Recorder type sonar traces the bottom of the lake and shows all objects. Also you can tell by size what type of fish there are. It gives an exact contour of the fish.
 - iii. Disadvantages - they can never take their eyes off the screen because they might miss the fish. They thought of using a beeper when a fish went by, but that would drive the fisherman crazy. Graph paper which is made by one company is always needed.
 - iv. It has a bad impact on fishing as a sport, it takes away any advantages the fish have of not getting caught. It takes away the anticipation and encouragement of the fisherman.

8. Write an essay on "The Impact of Sonar as a Technological Advance on the Fishing Industry".
Note: (Consider: What impact could this have on the supply of fish).

Sonar will have a great impact on the fishing industry. It is a very technological advanced way of fishing. It takes away all the guesswork of fishing. It will raise the amount of fish caught per day drastically. There will be more work available for men, since they can find the fish so easily now. The boats will get filled quicker and they won't be out to sea as long. They will be able to make better profits since they catch so many fish quicker. They can pay men and do repairs to the boat and it will be easier to pay. There won't be as many fish on the market later because there are so many being fished out at this time.

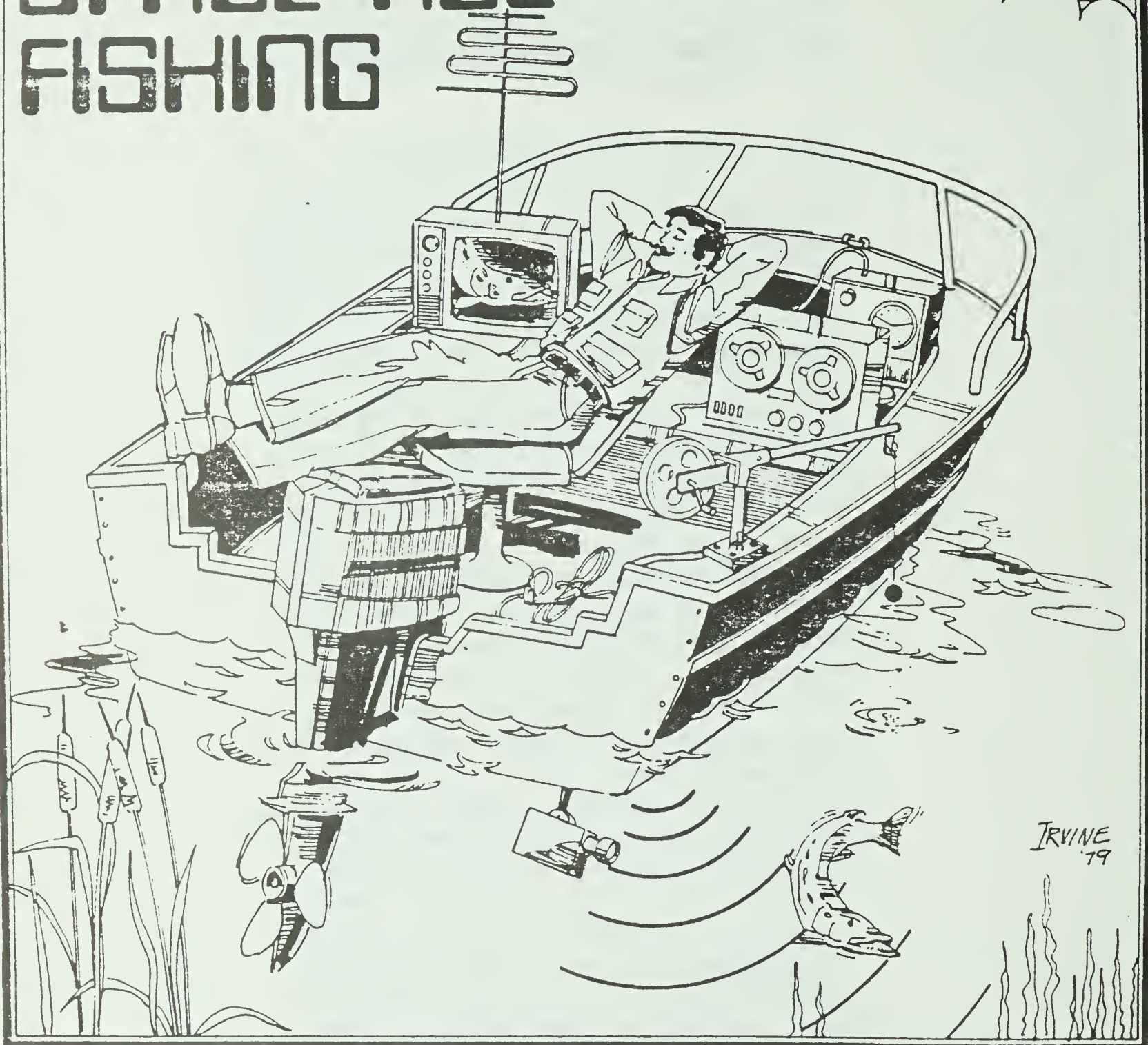
The industries might start competing with each other to see who brings in more fish per catch. It will speed up industry workers who pack the fish, they may have so many fish that they may have to work harder and they may want more money. They may also want to get a good share out of the wealth of fish.

While all of this fishing is going on fisherman may forget about the supply of fish, fish might not last forever. First they'll start off with big fish, then they'll go to the medium size one because all the big fish are gone. Then year after year the fish keep getting smaller because they don't give them a chance to grow up and they catch them when they are young. The supply of fish will be greatly decreased and then there will have to be a law set up that you can't get fish under a certain size. If we want our fish supply to last forever we must use it carefully and wisely, only take a bit out at a time and let the little ones grow.

All in all, the impact sonar has on the fishing industry is generally good. They shouldn't abuse or overuse sonar, but use it in an intelligent way, so that we will have fish left to use in the future.

Clara Ominger

SPACE-AGE FISHING



BY DAVID THOMPSON

Half the trick to catching fish is knowing where to find them. If the water you're flailing is barren, you might just as well stay home and drop a line in the bathtub.

That's why fishing is often a hit-or-miss proposition, especially when the lake or river is unfamiliar to the angler. If you work a body of water often enough, it simply becomes a matter of trying the known productive spots, but fishing a new lake is like the proverbial "shot in the dark." You try here, then try over there, and hope that at least one cast brings in

a fish before it's time to go home.

At least, that's the way it's done if you don't have a little space-age assistance. If you're equipped with a sonar scanner though, it can make the difference between spending your time fishing, or wasting it looking for the elusive lunkers.

Sonar (which stands for Sound for Navigational Research) has been around since the 1930s but was first put to practical use during World War II when it was used in submarine hunting.

Then, in the late '60s, sonar was heralded as the newest, most advanced fishing aid since monofilament line, and promoters promised

it would give the fisherman a fighting chance, adding the odds had been in favor of the fish too long.

Some people responded enthusiastically and anxiously sought the help of one of the marvelous machines that would let them "see" what was below the surface. They snapped up these new fishing companions that could do more than just speculate whether there were any fish to be caught in the area.

Then, of course, there were the dissenters. They accused the proponents of sonar fishing of being lazy anglers and lousy sportsmen. Sonar, they claimed, would make fishing more of a shopping trip than

a sport by eliminating any advantage the fish might have had. Now, they said, even the most inept angler would be able to catch his limit whenever he fished.

Their stance was so vehement that shortly after the units appeared on the market, at least two U.S. states made it illegal to use them in their waters. The ban was lifted, though, when it became evident that sonar could just show anglers where the fish are. *It can't make them bite.*

Since then, more advanced equipment has been developed, yet industry spokesmen say sonar fishing is still in its infancy. Looking ahead to the next five years, one manufacturer predicts units which are nothing less than underwater TV cameras with a monitor in the boat. The angler will watch a screen to see what is happening below him.

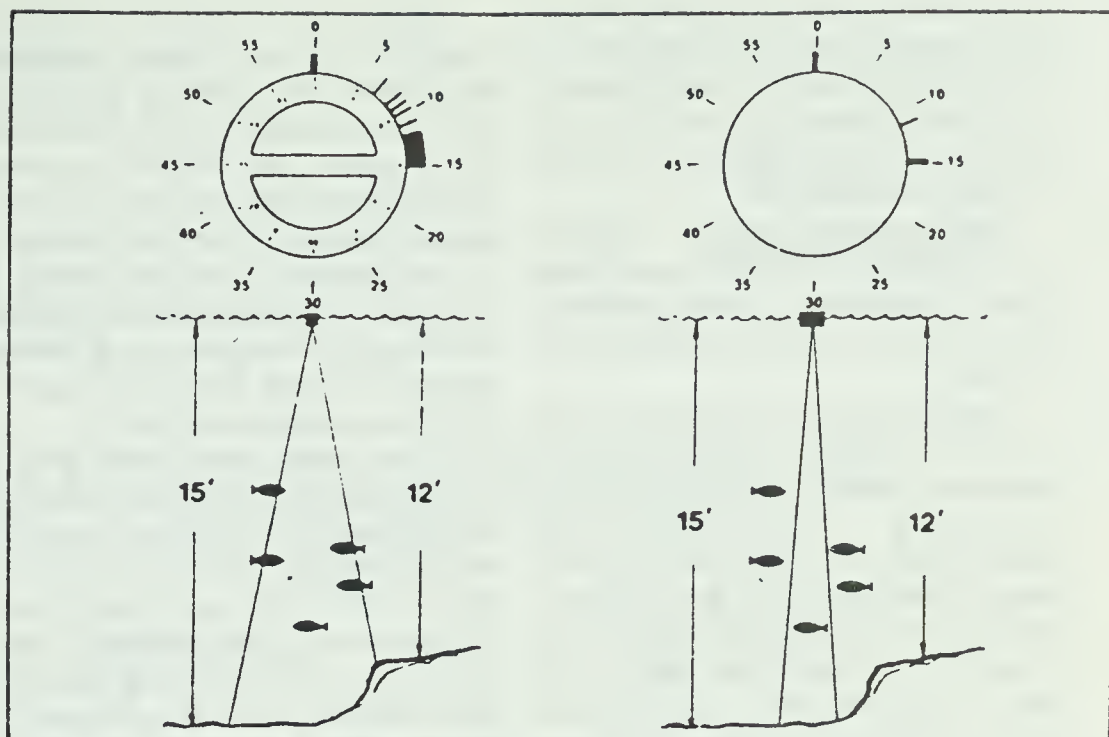
One manufacturer said that when sonar first came on the market, many fishermen regarded it as an elaborate toy and his company sold fewer than 100 units that year. "Now we're selling thousands, and there are people out there who feel absolutely lost trying to fish without a sonar unit."

Because sonar does seem to be a trend (if not the trend) for fishing in the 1980s, now is a good time to become familiar with it.

Sonar is based on the knowledge that water is an excellent sound conductor, and that the speed of sound through that element is always the same.

A sonar unit, no matter who manufactures it, is composed of three common parts. All have a transmitter that pumps electrical power into a transducer, which converts the power to millions of sound waves beamed at the lake bottom. The transducer then receives any sound waves bounced back and a receiver registers them on a dial of lights which tells how deep the water is, what the bottom contours are like and whether there are any fish in the area.

The obvious question, of course, is: How can you tell by looking at a light whether it's indicating a fish and not some other object? Well, though it's not impossible that something else is registering, it's highly unlikely. Few objects big enough to be picked up by sonar (other than fish) hang suspended in the water. They either float on the surface or sink to the bottom.



When more than one object is detected, the chances are 99 out of 100 that it's a school of fish suspended and not something else.

The sound waves which read the bottom are sent out in a cone shape, the widest point being at the bottom. Any waves reflected back within the cone are registered, while those deflected outside the cone (and that amounts to 96 per cent) are lost. That means the wider the cone your sonar emits, the more fish it will detect and indicate on the dial, provided the unit is being used in depths for which it was designed. Otherwise, the transducer's signals will be too weak to be of any use if it's a shallow-water type.

Sonars employing the lighted dial only are the most basic and the most popular models on the market. Dial-only sonars, designed for use in shallow water (18 to 30 metres), range in price from \$75 to \$175, while dial-only units for deeper lakes run from \$150 to \$275.

The main drawback to these units reported by some anglers, was that they could never take their eyes off them. If they did, they risked missing any fish that might appear only briefly on the scanner. To overcome that problem, some manufacturers have added a beeper that signals whenever a fish is picked up, though that too can become a problem if a school of fish appears. The resulting cacophony can drive a fisherman crazy if he doesn't switch the unit off.

But these units also offer a big advantage for one group of anglers. Because some weigh only 1.8 kilograms and run for three weeks of

steady use off a pair of six-volt lantern batteries, they're ideal for folks taking a canoe into wilderness areas!

Where you'll use the unit is an important consideration when deciding which model to buy, and that's true whether you're looking at basic or more advanced units. If you plan to use it exclusively on one lake no deeper than 30 metres, it's pointless to spend the extra money for a deep-water unit. On the other hand, a shallow-water sonar will be useless if you fish any body of water deeper than that.

The next major innovation in sonar fishing was the introduction of recorder types, which make a permanent record of what the sonar "sees." As the sound waves chart the bottom (and any fish there), a moving stylus traces the contours onto pressure-sensitive graph paper, creating a cross-section view of the lake bottom. Afterwards, the angler can write on the paper and make notes about anything he feels is pertinent information.

But these units don't just draw a line that shows the ups and downs of the bottom — they clearly indicate stumps, rocks, weed beds, and tell whether the bottom is hard rocks, sand or deep, soft mud. In other words, they don't just tell you whether the fish are there, but *why* they are or are not there.

Contrary to what some people might tell you, there is no unit on the market today which can identify a species of fish. An angler who has used his unit a great deal can often get a good idea of the size of fish appearing on the graph paper, and if he

is at all familiar with the lake, he can, also, through deduction and the process of elimination, make a reasonably good guess about what's there. But there are no units which will say "bass," or "lake trout."

Shallow-water sonar recorders cost anywhere from \$250 up to \$600, while deep-water sonar recorders start at about \$400 and range up to \$1,500.

Needless to say, these sonar units are considerably bigger than the dial-only models. If you consider purchasing a sonar recorder, the graph paper is important to think about. Find out where it can be purchased (is it readily available?), how much it costs and how long a roll lasts. Once you buy a unit, you are then committed to using that manufacturer's graph paper no matter how much the price escalates in the future. There's no standard size and, for the most part, one company's paper won't fit another's unit.

Equipment designed for outdoor use should be rugged, but many of the early sportfishing sonar units weren't. In fact, some of those models were ridiculously delicate!

Today, most units on the market can take some abuse, but bear in mind they still must be handled with care. Because they're used around water, it would seem that making a unit watertight would be an appropriate measure. But some manufacturers argue that it's better to construct them so air can circulate and condensation escape, which leaves many potential customers perplexed as to who is right.

Similarly, though sonar units are made for use around water, it's not a good idea to mount them where the transmitter, dial and recorder will be constantly exposed to rain and spray from the boat. On top of that, they should be placed so the amount of pounding they receive when the boat is moving, is at a minimum.

"It's obvious we aren't going to change the fishermen, so we have to change the sonar units," one manufacturer commented. "That's not an easy task because, after all, these are fine instruments."

Something else to consider when selecting a sonar unit is the availability of parts and access to service depots. A warranty is of little value if you can't get the unit to a place for repairs, or if it will be many months before it's returned at *your expense*.

Comparison shopping is always important when buying outdoor equipment, but that is especially true when considering the purchase of a sonar unit. With so many models on the market (each having a special feature or two that makes it a little different from the others), it would be impossible for us to print an accurate, complete list of fishing sonars. It would be out-of-date by the time we could publish it.

For example, some units give a clear graph when the boat is moving at high speeds. Others lock into different positions so the fisherman can watch it from any angle. Still others will produce a clear reading in only 30 cm of water. Ultimately, the fisherman buying the unit will have to decide which features are most suitable for his needs, so shop around and take your time deciding.

Although for most anglers a sonar unit is optional, there is one group for whom it's imperative. Downrigger (deep-trolling) fishing cannot be done effectively without sonar equipment.

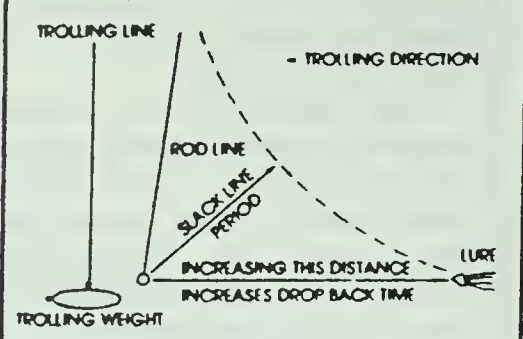
A downrigger consists of a reel, a lead weight, a pulley and a line-release mechanism and is used to take the fisherman's lure down deep when a sonar unit has shown that's where the fish are.

A nine- or 10-pound lead weight is attached to a stainless steel cable wound on the reel. The fisherman's line is attached to a release mechanism on the weight and the lure trails behind, fluttering or spinning as it was designed. When a fish strikes, the line is released from the lead (which is quickly brought to the surface), and the fisherman is free to fight the fish without being hampered by a lot of weights.

As mentioned, a sonar unit tells those on the surface whether there are any fish in the vicinity, but it also advises them of what is happening on the bottom — whether it's getting deeper or more shallow. That way, the weight can be lowered or raised as required. Without sonar, the weight is bound to eventually strike the bottom and a lot of damage could be done to the downrigger if it does not have a safety-release clutch.

The basic unit is controlled by hand but from there, far more elaborate models can be purchased. The next step up are those downriggers who are operated by a power source

Downrigger fishing technique



(electricity) and which can raise the weight as much as 30 metres per minute. Some downriggers automatically shut off when the weight has been brought to the surface. Meters linked to the reel tell people in the boat exactly how deep the weight is.

Since sonar units are limited (in that they only detect those fish in the sound wave cone emitted by the transducer), many downriggers are equipped with a thermometer which gives a digital readout, telling the angler whether he is fishing the correct temperature level for the species he wants to catch. Just because he doesn't see the fish on the sonar, it doesn't mean they aren't there.

As downrigger fishing becomes more popular, different methods of fishing them are bound to be developed. Two extremely good methods used now give the lure more natural actions and visually "call" the fish to the lure.

One method is to attach a flasher to the fishing line between the lure and the release mechanism on the weight. As the name implies, it flashes and draws attention to the lure, which is smaller and less visible.

Another method is to adjust the portion of the line trailing the weight so that when a fish snaps the bait lightly, it will look as though the lure has been stunned, and the fish can rush in and grab its prey. Suddenly, it's hooked!

If you have found that the results of your recent fishing trips have been an outrage, why not consider getting a little help from the space age?

Article courtesy of
Outdoor Canada
Magazine Limited and
David Thompson.
Outdoor Canada, M/A
1979.

WORD SEARCH

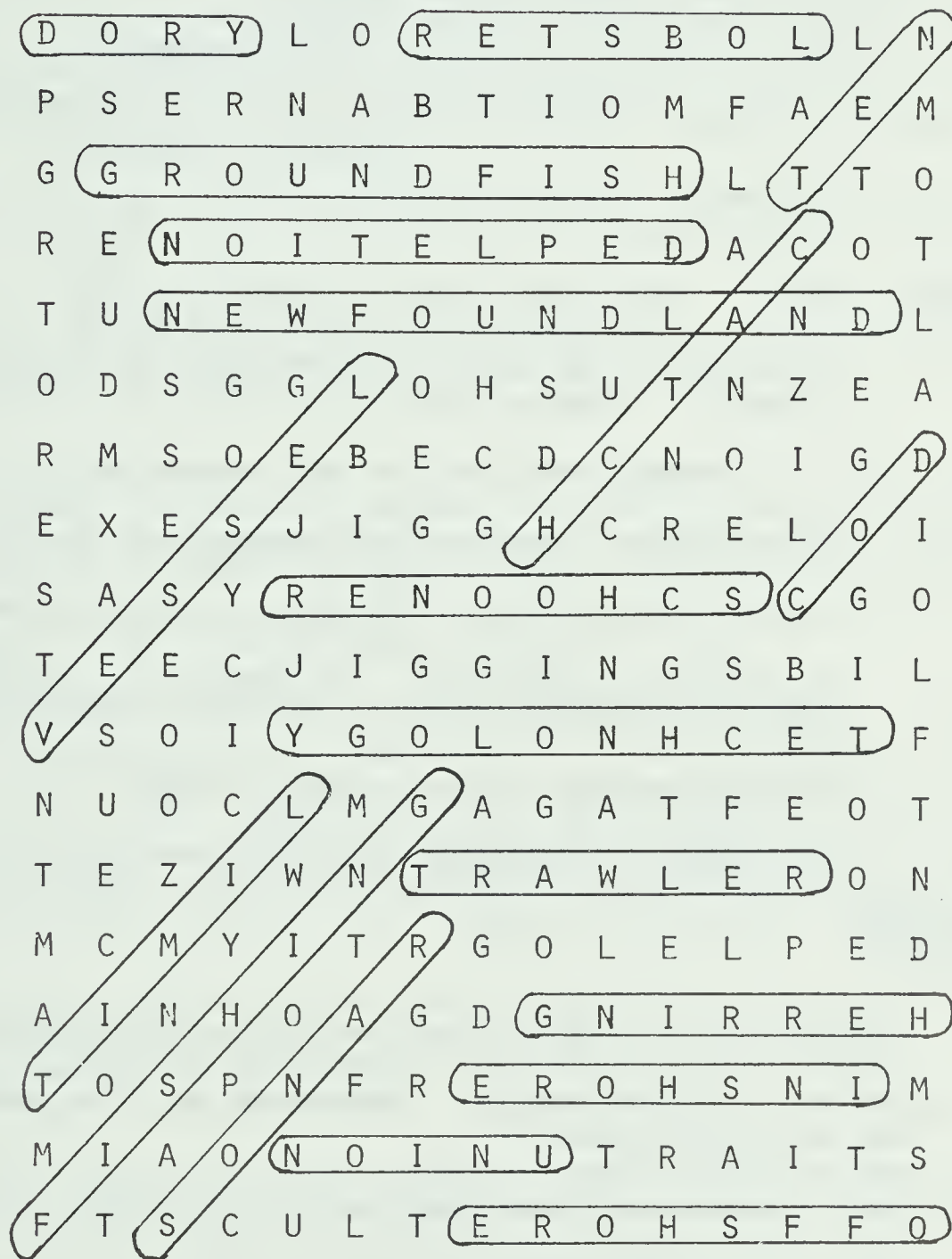
Read the clues given below. Decide on the correct word and locate it in the word search. They may occur vertically, horizontally or diagonally. Some may also be spelled backward.

1. A large boat used for taking fish.
2. A small flat-bottomed rowboat.
3. Canada's furthest province to the east.
4. Catching fish by jerking a line up and down in the water.
5. A large sailing vessel once used for fishing.
6. An organization formed to help fishermen.
7. Fish living near the bottom of the ocean.
8. Canada's waters have been extended to a 320 kilometre _____.
9. To patrol this area the government puts out a Coast Guard _____.
(similar to cutter)
10. A marine crustacean caught in a trap or pot.
11. A fish from which oil is made.
12. The older fishermen rowed out each day and fished _____
while today large ships sail out and fish _____ shore.
13. A device used to detect schools of fish.
14. Has _____ been a boon or a disaster to the Canadian _____
industry?
15. A device used to catch herring is called a purse seine _____.
16. The largest tonnage of fish caught in Atlantic Canada is cod; the
second largest is _____.
17. Two other words in the search are "catch" and "depletion".

WORD SEARCH

D	O	R	Y	L	O	R	E	T	S	B	O	L	L	N
P	S	E	R	N	A	B	T	I	O	M	F	A	E	M
G	G	R	O	U	N	D	F	I	S	H	L	T	T	O
R	E	N	O	I	T	E	L	P	E	D	A	C	O	T
T	U	N	E	W	F	O	U	N	D	L	A	N	D	L
O	D	S	G	G	L	O	H	S	U	T	N	Z	E	A
R	M	S	O	E	B	E	C	D	C	N	O	I	G	D
E	X	E	S	J	I	G	G	H	C	R	E	L	O	I
S	A	S	Y	R	E	N	O	O	H	C	S	C	G	O
T	E	E	C	J	I	G	G	I	N	G	S	B	I	L
V	S	O	I	Y	G	O	L	O	N	H	C	E	T	F
N	U	O	C	L	M	G	A	G	A	T	F	E	O	T
T	E	Z	I	W	N	T	R	A	W	L	E	R	O	N
M	C	M	Y	I	T	R	G	O	L	E	L	P	E	D
A	I	N	H	O	A	G	D	G	N	I	R	R	E	H
T	O	S	P	N	F	R	E	R	O	H	S	N	I	M
M	I	A	O	N	O	I	N	U	T	R	A	I	T	S
F	T	S	C	U	L	T	E	R	O	H	S	F	F	O

WORD SEARCH



INQUIRY STEP IV & V	ACTIVITY 18	Pollution and Conservation
FOCUS OF INQUIRY: How do we control pollution and resolve conflict between industries?		
<p>INTENT: To enable the students to gain an understanding of the impact of pollution on the fishing industry.</p> <p>To allow students to practise a mini-inquiry.</p>		

TIME: 80 minutes

RESOURCES: "Toxic sludge in Davy Jones's locker", SR 28

"A Perspective on Mill Tailing Disposal at Kitsault, British Columbia", TR 4, pp. 1-5

- TABLE I and TABLE II from above article, SR 29

Across Canada: Resources and Regions, pp. 207-210, 278

Canada: The Land and Its People, pp. 110, 125-126, 131

The Technology Connection: The Impact of Technology on Canada, pp. 155-157

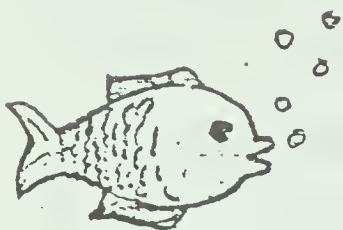
"Surprise support at Amax meeting", SR 30

"Rules made to be broken, says fisheries minister", SR 31

INSTRUCTIONAL SUGGESTIONS:

1. Indicate to the students that the activity today deals with pollution and conservation. Review the meaning of the terms pollution and conservation. The references in the textbooks deal with these terms.
2. Place students in random groups of five or six.
3. Hand out to the students the article "Toxic sludge in Davy Jones's locker" SR 28. (Note that "Davy Jones' Locker" is an old term for the sea.) Show them on a map the location of Alice Arm and Kitsault.

4. Ask them to read the article and as a group try to come to agreement on the following questions:
 - a. What is the issue?
 - b. Who are the antagonists and who are the protagonists?
 - c. What is the position of each side?
 - d. What is the information provided by each side to support its arguments?
 - e. Decide whether you feel that each side has solid and believable arguments.
 - f. On the basis of this information, what decision would you make?
 - g. Decide what could happen if this decision were implemented.
5. Have each group report its findings.
6. Refer to Teacher Resource T4 "A Perspective on Mill Tailing Disposal at Kitsault, British Columbia" for background information on controversy in relation to pollution at Kitsault, British Columbia. Introduce TABLE I and TABLE II, SR 29 from this article to your class. Ask the students to determine if the mine is exceeding allowable pollution limits.
7. Give other arguments justifying the position of the AMAX Corporation presented in the article TR 4 to your students. Ask the class to look at Across Canada: Resources and Regions, pages 207 to 210, 278, Canada: The Land and Its People, pages 110, 125 to 126, 131 and The Technology Connection: The Impact of Technology on Canada, pages 155 to 157 for further general information about water pollution which may support or refute the arguments by AMAX.
8. Ask the students if they have changed their minds about a solution to the problem. If so, what is their new solution?
9. What would be the results of implementing this solution?
10. Distribute the article "Surprise support at Amax meeting" SR 30. Ask students what new information has been presented. Ask if there is anything in the article to change their minds.
11. Can we do anything about this particular problem? Students may suggest writing to Kitsault School to find out how students there feel, or may suggest writing to their M.P. to ask why the project was approved.
12. Sum up by showing the class that they have done a mini-inquiry and review the steps involved in the inquiry process with them.



CHALLENGE ACTIVITIES:

- A. Students who are interested in science might like to take TABLES I and II, SR 29 and find out which metals and elements are harmful and at what levels. (Check with science teachers.)
- B. This issue has been in the news a great deal. Some students may wish to check for past or current articles on it. These could be placed on the bulletin board or presented to the class. See SR 31 "Rules made to be broken, says fisheries minister" as an example.
- C. Some students might like to investigate Minamata disease, mentioned in article SR 28 "Toxic sludge in Davy Jones's locker".

OUTCOMES:

At the end of this activity, students should be able to:

- 1. relate the impact of pollution on the fishing industry;
- 2. know the steps involved in inquiry.

4. a. What is the issue?
The issue involves the tons of toxic waste that is being dumped into Alice Arm, one of the inlets that Nishga Indians have been fishing in for centuries. The federal government had given permission to a company called Amax Canada Ltd. to dump the wastes into the inlet.

b. Who are the antagonists?
The antagonists are the Nishga Indians because their fishing grounds are being contaminated.
Who are the protagonists?
The protagonists are the federal government and Amax Canada Ltd. without apparent consideration for the Nishga Indians.

c. What is the position of each side?
The Nishga Indians oppose the dumping of wastes in the inlet because they heavily rely on the fish as a means of survival, if the toxic waste contaminates the fish, it is poisoning them. The Amax Canada Ltd. and the federal government, however, claim that there is no danger in the Alice Arms project and they refuse or rather ignore the Indians' protests and continue to promote the project. Also it costs too much to make an alternative.

d. What is the information provided by each side to support their arguments?
The Nishga Indians also had scientists say that the Alice Arm is their fishing grounds - it has been for centuries. If the mine wastes contaminate the fish -

it's poisoning them as well. Also the Indians rely on the fish for survival; tell them to stop, and they may starve. The federal government and the company, on the other hand, insist that there is no danger of contaminating the fish and that scientists have been researching the area and there is no danger. However, the long range effects are not yet known.

e. Do you feel that each side has solid and believable arguments?

No I don't. I feel that the only believable side is the side of the Nishga Indians because they had the right to the inlet- Alice Arm- before the company took over. The federal government gave Amax Canada Ltd. permission to destroy the fish in the inlet without first consulting the Indians; second, doing more research on the mine wastes (discovered to contain radium) and possibly putting some sort of safety precaution when dumping the wastes.

f. On the basis of the information given, what decision would you make?

My decision would be that either the Amax Canada Ltd. have their Alice Arm project taken away from them, or that some sort of safety precautions be used, or that some compromise be made to make up for the Indians' loss of one of their most dependent fishing areas.

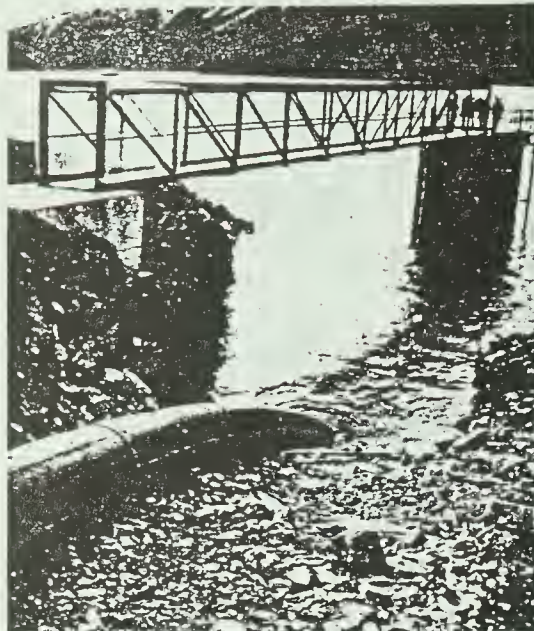
Linda Sikorski.

Toxic sludge in Davy Jones's locker

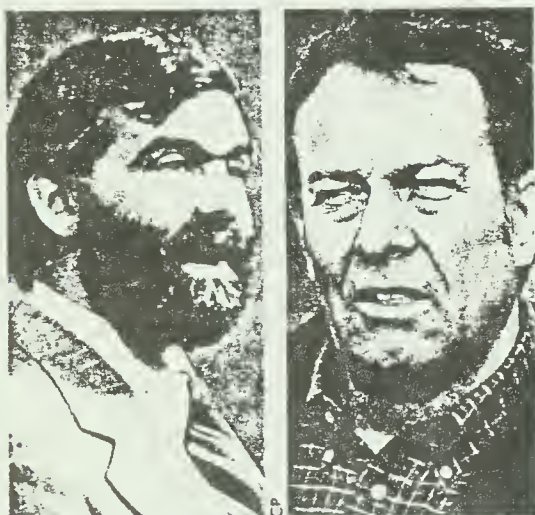
Evidence implies that opening a precedent-setting project could raise life-and-death issues

By Linda McQuaig
and Rod Mickleburgh

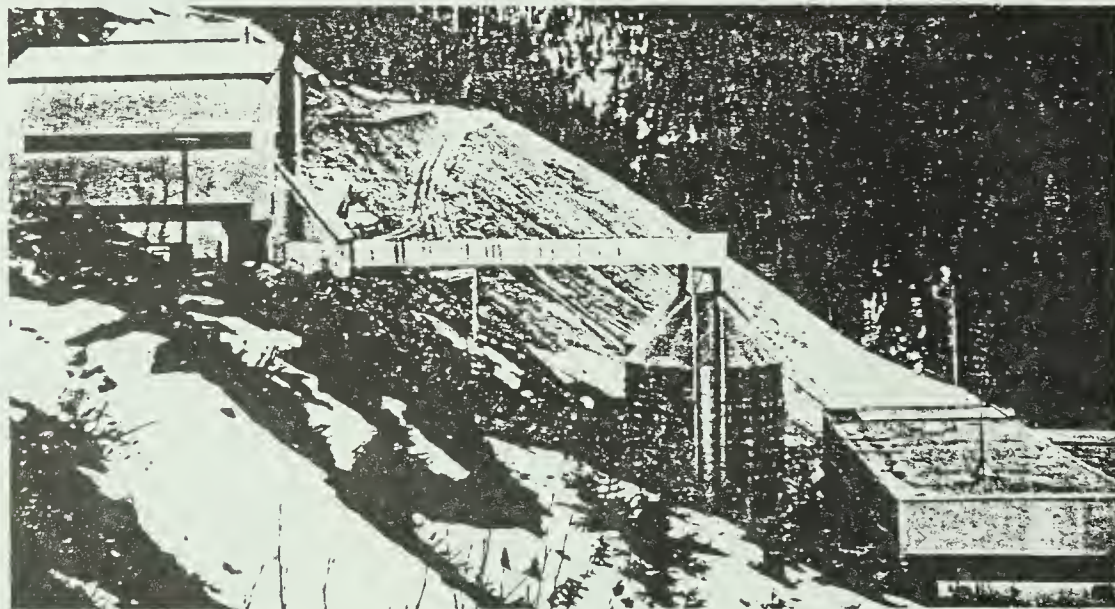
When the huge mine swings into operation in Kitsault, B.C., next week, it will be a grim day for the Nishga Indians. Despite high unemployment, the promise of jobs at the molybdenum mine sparks little interest in the remote Nishga villages of the Nass River Valley of northwestern British Columbia. For most of the 2,500 Indians, the mine represents one thing: a threat to their way of life. Primarily a tribe of fishermen and loggers, the Nishga carry on a simple and separate existence in communities that are almost all inaccessible by car. Now the federal government has given Amax Canada Ltd.—a subsidiary of the giant multinational Amax Inc.—permission



Tailing outfall pipe (top); Amax mill: long-range effects are still unknown



Fulton (left); Born: did investigators consider the future of native fishing?



to dump 12,000 tons of mine wastes a day into Alice Arm, one of the inlets that Nishga Indians have been fishing for centuries.

This barrage of mine tailings, which includes highly toxic radium 226, arsenic, lead and mercury, will soon coat the bottom of the inlet with a heavy sludge, smothering plant and marine life and, some fear, contaminating the fish. Tribal council President James Gosnell points ominously to what happened at Ontario's White Dog and Grassy Narrows reserves, where Indians developed Minamata disease after eating fish poisoned by mercury pollution. Says Gosnell: "If the fishing here is contaminated, God help us." More than most tribes, the Nishga rely on fish for survival. "That's the scary part," says Nishga Vice-President Rod Robinson. "It's hard to tell your neigh-

bor 'you can't eat that salmon anymore.' It's what they've always eaten."

The Nishga's law-abiding traditions have long commanded respect in government circles. But the tribe's responsible image has had little impact on a federal government keen on promoting northern development. While insisting the Alice Arm project is basically safe, the government acknowledges there are risks. "There isn't an industrial development associated with water that doesn't have some impact on fish," says Douglas Johnston, assistant deputy minister of fisheries. "If we didn't allow any danger, nothing would take place in industry." But a growing number of scientists are expressing fears about environmental dangers and the Nishga themselves are asking why federal restrictions were waived by the cabinet to approve the dumping. Despite these

concerns, the federal government has refused the Indians' request for a full public inquiry.

At the centre of the controversy is the question of what will happen when more than 100 million tons of mine tailings are dumped into the inlet over the 26-year term of the permit. The cabinet's decision to approve the project was based largely on information provided by the company and reviewed by government officials. The government maintains that the tailings will sink to the bottom of the inlet and stay there, possibly driving deepwater creatures such as halibut, sole and crabs to other locations. But federal officials insist that the project won't be toxic to fish—a contention that some independent scientists dispute. Lawrence Albright, a marine microbiologist at Simon Fraser

University, examined Environment Canada's results on PCBs found in the inlet and stated categorically that he opposed the dumping. Albright believes the combination of the mine tailings and PCBs from a previous mine operation in the area could make the fish dangerous to a people who eat them in large quantities. University of British Columbia oceanographer Stephen Pond points out that predictions similar to those being made by the government now—that dumped tailings would stay on the bottom—proved inaccurate at Rupert Inlet, the only other site in B.C. where this kind of dumping occurs. "These tailings are going to spread more quickly than they think," cautions Pond.

The B.C. Medical Association struck the most ominous note of all, pointing out that radium 226, which remains ra-

radioactive for thousands of years, is one of the most carcinogenic substances known. According to Pat Chamut, chief of chemical hazards in the fisheries ministry, the amount of radium to be dumped is so infinitesimal that the ministry anticipates no harm to humans. But Dr. Robert Woollard, chairman of the medical association's environmental health committee, insists there's really no such thing as a "safe" amount of radium 226. A small concentration of radium 226 intensifies as it passes through the food chain from sediment to plants to fish to humans. "There's no question that by increasing



federal regulations by several thousand per cent, Amax had to approach the cabinet for a special order-in-council approving the project. Only after the cabinet had granted the company a special permit—the first and only time such an exemption has been granted—did the Nishga learn of the plan. According to government officials, Amax was given permission to dump the tailings because the alternative—building a special tailings pond on land—would pose even more environmental risks. But a government position paper cites another factor: the difference in cost. A tailings pond would cost Amax, the world's largest producer of molybdenum, an additional \$23 million. With such a large sum at stake, there have been charges in the House of Commons that the cabinet may have approved the dumping partly as a favor to John Aird. The former Liberal senator and close friend of Prime Minister Trudeau was a member of Amax Inc.'s board of directors when its subsidiary was seeking the permit. Aird, who resigned from Amax last September when the federal government appointed him lieutenant-

Aird (left); Gosnell (below, far left) with B.C. ministers: debate over permit



the exposure you increase the likelihood of people getting cancer," he says.

With the potential risks so great, the Nishga wonder whether the government fully considered their welfare in approving the project. Jim Fulton, the NDP member of Parliament representing the area, says he thinks federal officials ignored the importance of the inlet for native fishing because investigators quoted in a key report prepared by the company didn't notice any natives fishing during the course of their study. With the Nishga showing little interest in employment at the mine, it seems unlikely they will reap any benefits from the project. Woollard, of the medical association, comments, "It really comes down to who gets the cancer and who gets the bucks?"

The Nishga feel particularly incensed that they were left out of all the consultations over the mine. Since the company's plan to dump mine tailings violated

governor of Ontario, refuses to discuss the permit. Through a spokesman he denies any involvement in securing federal approval.

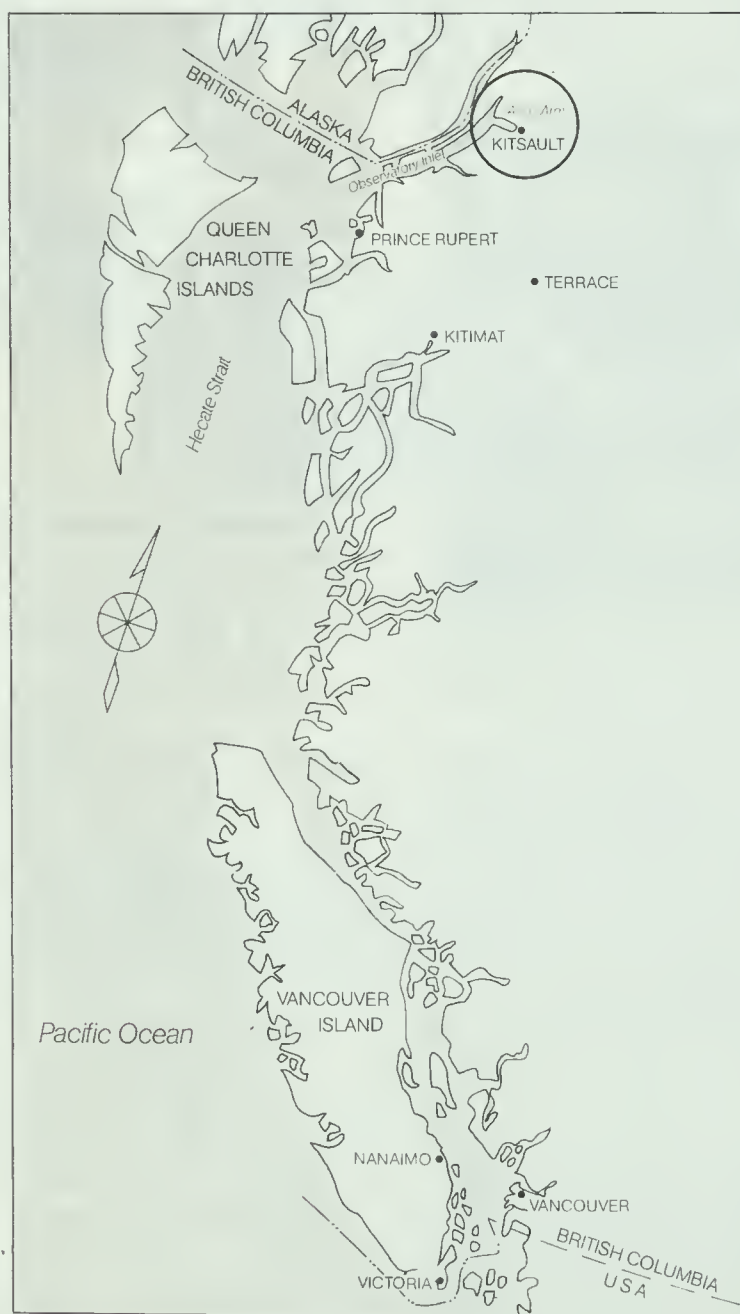
For their part, the Nishga have won the support of the Anglican Church, whose primate, Edward Scott, has written personal letters of protest to the prime minister. The church has also bought \$200 worth of shares in Amax Inc. At the company's annual shareholders' meeting in New York in May, its representatives will present a resolution calling for a moratorium on the project.

Amax President J. Allan Born insists that his company is prepared to cooperate with federal monitoring of the project. But the Nishga point out that if federal predictions turn out to be wrong, it won't be Born or government officials who feel the effects. Says the tribe's lawyer, Don Rosenbloom: "The Nishga are the very first in line. ♡"

Article courtesy of
Maclean's Magazine.
Maclean's, March 30,
1981.

A PERSPECTIVE ON MILL TAILING DISPOSAL AT KITSAULT, BRITISH COLUMBIA

AMAX OF CANADA LIMITED



Introduction

AMAX of Canada Limited is in the process of expanding and re-opening a major open pit molybdenum mining and milling complex at Kitsault, British Columbia.

Kitsault is located approximately 140 kilometres (90 miles) northeast of Prince Rupert at the head of Alice Arm. This narrow inlet is the landward terminus of a system of inlets stretching some 110 kilometres (70 miles) inland from the Pacific Ocean.

In addition to redeveloping the mine and mill, AMAX is also constructing a modern townsite to house the anticipated population of about 1,000 people. The company is building a road into the area from the Nass Valley which will provide Kitsault residents with access into neighboring interior communities. Production from the Kitsault mill is scheduled to begin in April, 1981.

AMAX has spent millions of dollars and thousands of hours in designing a project that can exist in harmony with the environment of this isolated region of British Columbia. Since Alice Arm itself is intended to receive the mill process effluent or "tailing", a great deal of the time and money has gone into the study of the inlet and into the design of an environmentally-safe tailing disposal system. AMAX believes that this system will not adversely affect the fishery of Alice Arm or any of the surrounding area. A detailed monitoring program has been initiated and will be maintained throughout operations, to provide surveillance of the receiving environment.

Concerns have been raised:

During the course of construction at Kitsault, some concern has been expressed about the tailing disposal system and its possible effects on the environment.

Specifically, it has been suggested that:

- The tailing which will be discharged into Alice Arm consists of "poisonous wastes";
- The tailing will destroy the food chain of the Nishga Indians and damage the west coast fishery;
- Insufficient study and consideration has been given to the possible impact of the tailing on the environment in Alice Arm;
- AMAX has been absolved from conforming to normal environmental controls by the Federal Government enacting a special disposal regulation.

These claims are simply not true and as a result this booklet has been prepared to address each concern. It is hoped that this information will relieve public concern and provide the necessary assurance that the tailing disposal system proposed by AMAX, and approved by both federal and provincial regulatory agencies, has been designed on an environmentally-sound basis and is compatible with the ecology of Alice Arm.

"Poisonous waste" - just rock and water:

The so-called "poisonous waste" that will be deposited in Alice Arm is the mill process effluent, commonly known in the mining industry as "tailing".

In actual fact, tailing from the Kitsault mining and milling process will be little more than a mixture of fresh water and finely-ground rock, very similar in nature to the sediments being deposited daily by rivers all along the coast of British Columbia.

The formation of tailing begins in the open pit mine where explosives are used to break the rock containing the molybdenum mineral. Large electric shovels then load the rock into trucks for transportation to the crushing circuit which is the beginning of the milling process.

The ore enters the mill or processing plant through the primary crushers, which reduce its size to approximately eight inches in the largest dimension. Successive crushing and grinding stages further reduce the size of the rock down to the size of beach sand.

At this point, the "sand" is mixed with fresh water and enters into the flotation process where an air bubbling

technique separates the molybdenum from the "sand" and floats it to the surface to be skimmed off for further processing before yielding the molybdenum concentrate end product. What remains at this stage is a slurry of fresh water and solids in a ratio of approximately three to one. It is this slurry -- commonly referred to as "tailing" -- that is to be discharged into the depths of Alice Arm.

No threat to food chain:

Much of the concern surrounding the Kitsault tailing disposal system has revolved around the contention that the tailing deposit will destroy the fishery in the area. However, careful examination of the nature of the disposal system and of the tailing itself indicates that this will not be the case.

As previously noted, the tailing is little more than "sand" and fresh water. Table I shows that the chemical characteristics of the tailing solids, or "sand", are comparatively similar to that of the natural sediments in the rivers and streams entering Alice Arm.

The rivers flowing into Alice Arm have been estimated to deposit 500,000 tons of sediment into the inlet each year. The tailing disposal system at Kitsault will deposit an average of about 12,000 tons of sediment into the Arm each day. By comparison, a large river such as the Nass River can discharge up to 40,000 tons of sediment into the ocean in a day — and the Nass River supports a major salmon fishery.

By far the greatest proportion of the tailing solids -- more than 90 per cent -- consists of silicate minerals comparable in nature to minerals which comprise ordinary

beach sand. Heavy metals, which are found in association with the silicates, constitute only a fraction of a per cent of the total amount of tailing solids discharged.

Previous mining operations at Kitsault from 1968 to 1972 disposed of the tailing directly into a local creek which then discharged the tailing into the surface waters of the inlet. Since surface waters of the ocean tend to be the most productive, this method of disposal has the most potential for causing environmental damage. However, these earlier operations have had no discernible effect on the local fishery.

Unlike the previous operation, AMAX of Canada's proposed tailing disposal system has been designed to transport the slurry by pipeline from the mill and discharge it at a depth of 50 metres (164 feet) below the surface of Alice Arm. At that point the tailing will settle downwards to the bottom of the inlet to depths of up to 380 metres (1,200 feet).

This system of disposal has been selected on the basis of it having the least potential for creating an impact of any significance on the ecology of Alice Arm.

TABLE I
A Comparison of Metal Levels in Sediments of Rivers
Tributary to Alice Arm with the Kitsault Ore Body

Sample Identifier	Copper Cu (ppm)	Lead Pb (ppm)	Zinc Zn (ppm)	Nickel Ni (ppm)	Cadmium Cd (ppm)	Manganese Mn (ppm)	Molybdenum Mo (ppm)	Arsenic As (ppm)	Mercury Hg (ppm)	Iron Fe (%)	Uranium U (ppm)	Radium RA226 (pCi/l)
Patsy Creek Station #1	28.	18.	195.	122.	0.4	2070.	L 10	23.7	0.02	3.73	-	-
Lime Creek Station #2	31.	25.	130.	60.	0.1	1350.	L 10	113.	0.02	3.69	-	-
Kitsault R Station #4	49.	25.	118.	27.	0.4	820.	L 10	36.1	0.07	3.40	1.5	1.4 ± 0.3
Illiance R Station #5	68.	27.	264.	36.	1.6	1510.	L 10	47.1	0.12	4.23	1.5	1.6 ± 0.3
Roundy Creek Station #6	22.	20.	128.	53.	1.0	685.	L 10	13.	0.02	2.93	-	-
Kitsault Ore Grade ***	50.	220.	500.	L 20.	12.4	600.	1093.	L 10.	0.08	2.20	1.6	-

ppm = parts per million L = less than pCi/l = picocuries per litre

* Average uranium concentrations in the sediments of Alice Arm and Hastings Arms have been found to be 1.4 and 2.0 ppm, respectively.

** Ra226 occurs in equilibrium with uranium natural, however Ra226 is measured in activity units (pCi/l) rather than mass concentration.

***Quantitative analyses performed on random samples of Kitsault ore from within the 0.1% MoS₂ boundary.

ACTIVITY 18

Tailing disposal to be under strict controls:

Although the tailing disposal system has been approved by both federal and provincial regulatory authorities, the Kitsault mine will be allowed to operate only under stringent environmental controls monitored by a comprehensive sample collection, laboratory investigation and data analysis program.

Both the federal regulations (the Alice Arm Tailing Deposit Regulations) and the British Columbia Waste Management Branch Permit (PE-4335) are issued subject to definite terms and conditions. Foremost of these is that the liquid portion of the tailing stream must meet strict dissolved metal concentrations as specified

in both approvals. These allowable limits are detailed in Table II and compared with laboratory data from a pilot test program on the Kitsault ore.

It is evident from this data that the dissolved metal concentrations in the tailing stream will be maintained at levels which, in most cases, will be many times lower than the allowable levels.

Additional conditions specified by the regulations clearly state that the tailing must not enter into the surface waters of Alice Arm and must remain confined within the Alice Arm basin proper.

TABLE II Comparison of metal levels in Kitsault ore tailing with the levels permitted by government regulatory agencies

Element	Tailing Decant Water* (dissolved mg/1)	Authorized Levels		
		B.C. Provincial Waste Management Branch Permit PE-4335 (dissolved mg/1)	Federal Alice Arm Tailing Deposit Regulations (dissolved mg/1)	Federal Metal Mining Liquid Effluent Regulations (Total mg/1)
Arsenic (As)	0.2 - 0.3	0.25	0.40	0.50
Copper (Cu)	0.008 - 0.01	0.05	0.05	0.30
Lead (Pb)	L.01 - .02	0.05	0.05	0.20
Nickel (Ni)	0.01 - 0.07	-	0.20	0.50
Zinc (Zn)	L.005	0.50	0.10	0.50
Cadmium (Cd)	L.005	0.01	0.01	-
Radium 226 (Ra)	.3 - .9 pCi/1	-	10.0 pCi/1	10.0 pCi/1
Mercury (Hg) (total on de- canted sample)	L.0001	0.001	-	-
Manganese (Mn)	.005 - .007	0.05	-	-
Molybdenum (Mo)	.22 - .49	1.00	-	-
Iron (Fe)	L.005 - .007	0.30	-	-

* From a laboratory pilot program. These data are applicable to only a limited type of ore and some variations could be expected from the deposit as a whole.

mg/1 = milligrams per litre = parts per million pCi/1 = picocuries per litre L = less than

Extensive oceanographic studies conducted on Alice Arm:

Prior to committing itself to the Alice Arm tailing disposal system, AMAX of Canada commissioned an extensive series of oceanographic studies on Alice Arm which spanned a period of four years. Among other things, these studies examined ocean currents; the metal content of the water, sediments and animal tissues; the populations of marine organisms present in the inlet; water clarity and the runoff of the rivers flowing into Alice Arm.

These studies culminated in 35 technical reports, all of which were made available to both the federal and provincial regulatory authorities. Only after detailed examination and discussion of the information contained within these reports were the necessary approvals

granted by the regulatory agencies to allow the present tailing disposal system.

Further studies of the inlet ecology will continue throughout operations in the form of detailed annual monitoring programs required by the federal Ministry of Environment - Environment Protection Service, the Ministry of Fisheries and Oceans and the Province of British Columbia, Ministry of Environment Waste Management Branch.

Concerns not based on fact:

AMAX believes that the concerns which have been expressed about the Kitsault tailing disposal system are unfounded and are not based on scientific analysis or fact. Rather, they have stemmed from conflicting remarks and misunderstanding, and have been formulated around speculation, opinion and emotion.

This booklet has attempted to explain some of the facts and clarify the issues in a concise and readable fashion. Should you have any questions relating to the information presented, or to any other aspects of the Kitsault operation, please write to:

AMAX of Canada Limited
P.O. Box 12525, Oceanic Plaza
1600 - 1066 West Hastings Street
Vancouver, B.C. V6E 3X1

January 1981

Article courtesy of AMAX of Canada Limited.

TABLE I AND TABLE II

TABLE I

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Copper (Cu)	0.008 - 0.01	0.05	0.05	0.30
Lead (Pb)	L.01 - .02	0.05	0.05	0.20
Nickel (Ni)	0.01 - 0.07	-	0.20	0.50
Zinc (Zn)	L.005	0.50	0.10	0.50
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Radium 226 (Ra)	.3 - .9 pCi/l	-	10.0 pCi/l	10.0 pCi/l
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Manganese (Mn)	.005 - .007	0.05	-	-
Molybdenum (Mo)	.22 - .49	1.00	-	-
Iron (Fe)	L.005 - .007	0.30	-	-

* From a laboratory pilot program. These data are applicable to only a limited type of ore and some variations could be expected from the deposit as a whole.

mg/l = milligrams per litre = parts per million pCi/l = picocuries per litre L = less than

TABLES I and II courtesy of AMAX of Canada Limited.

Surprise support at Amax meeting

BY JERRY HAMES

NEW YORK

Nishga leaders and the Anglican Church received unexpected support from Amax shareholders when they appeared before the corporation's annual meeting here last month to protest the dumping of mine tailings from the molybdenum mine at Kitsault, B.C., into a Pacific waterway.

Members of the Nishga Tribal Council, representatives of Project North and national church spokesman Rev. Peter Hamel were elated when the results of a shareholders ballot by mail announced at the meeting showed that one-third of Amax shareholders decided either not to support management's position, or to abstain.

The church, which bought shares of Amax in order to present its resolution, asked shareholders to request the directors to declare a moratorium on the marine disposal of tailings until it completed a study of the social, economic and environmental effects of the Kitsault project, which would include a full public hearing.

The company's board of directors, which includes many notable names in the oil and business community, as well as former President Gerald R. Ford, had recommended to shareholders that the resolution be defeated.

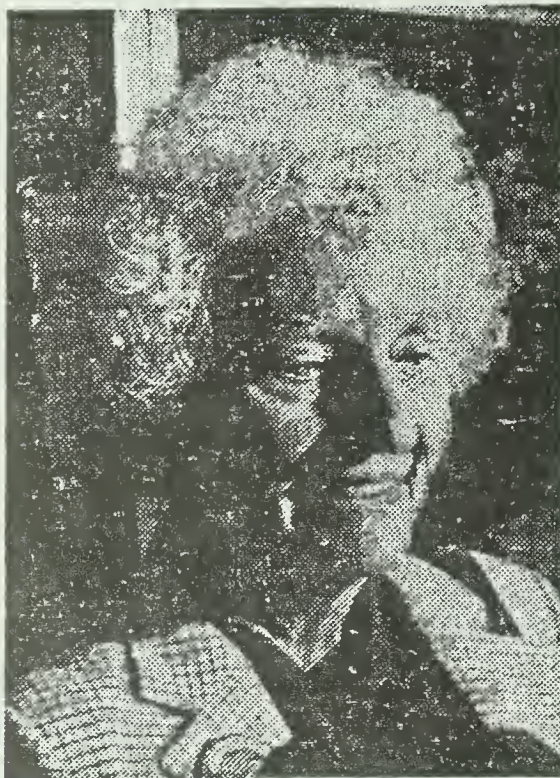
Yet, more than 1,500,000 shares were voted in favor of the church's resolution and another 16,375,000 shares were abstentions. A total of 30,021,000 shares supported the board of directors recommendation.

"That means between five and six per cent voted against management's position," said Tim Smith, of the task force on corporate responsibility and the churches in New York, who helped prepare the church's case. "And the abstention rate is very significant. It is a clear signal for management."

When the votes were announced, Amax chairman and chief executive officer Pierre Gousseland was heard to say: "Six per cent. That's very nice. I guess that means they'll be back next year."

If a resolution receives three per cent or more support from shareholders, it can be reintroduced at next year's annual meeting.

In a 25-minute presentation, which at times tested the patience of shareholders, the Nishga leaders and the church pointed to the inadequacy of studies on the social and environmental effects of the proposed 25 years of marine dumping from the mines.



ALICE RICHARDS

"We do not see any guarantee by your company for the safety of the environment," Nishga council president James Gosnell told the crowded meeting of several hundred shareholders. "If your company had made the same proposal in the state of New York - had made the same proposal to the people of New York to dump it mine tailings in the Hudson River - no New York person in his rightful mind would support the proposal," he charged.

"Our lives are at stake," said Nishga vice-president Rod Robinson. "The image of Amax throughout Canada is that of a multinational corporation with total disregard for the environment."

"The government of Canada should be here, voicing its concern. They are the ones who should be here, not us," Chief Robinson said.

He called on the corporation to reconsider and if it chose to proceed, to consider on-land dumping which would not endanger marine life in Alice Arm, a prime source of fish for the Nishgas.

Rev. Ian MacKenzie, of Greenville, B.C., a member of National Executive Council, said that when the Nishga community first heard of the mining proposal in January 1980, it was agast at the immensity of the project. "Then, when we heard you superceded federal government regulations (by a special order-in-council), we were concerned immensely," he said.

"Then, when we read from one of your studies that there was no evidence of Indian food fishing in the arm (Alice Arm), we were astonished. 'If he (your researcher) could be dead wrong on this issue, on what other evidence could he also be wrong.'"

The most forceful person to speak on the resolution was Alice Richards, 65-year-old daughter of the late Max Schott who was founder and director and one-time president of Climax Molybdenum Company, a forerunner of Amax.

"My father was a man of fairness who always took a principled stand on the safety and health of his workers and he was a man who was concerned with the community," said Ms. Richards, who with her husband owns several thousands Amax shares.

"We live in a historical period when we have a responsibility to our shareholders and also to the people in those countries where we have operations. These are people who are dependent upon the actions we take," she told the hushed gathering.

Shareholder shocked

"The vote we take on this issue will have wide repercussions in Canada. It is for our economic benefit as well as our moral responsibility to vote in favor of this (the church's) resolution."

After the meeting, she said she flew from California at her own expense after the Nishgas asked her to speak on the resolution.

"We have a great responsibility for other peoples," she said. "Our actions often seem to affect the lives of minority peoples."

"In all honesty and justice, if we're so right and there is no danger from dropping tailings into the ocean, then why have we refused to allow public hearings," she said.

She said it was "shocking" that the federal government has had made a special exemption for Amax through an order-in-council by cabinet which permits the dumping of toxic tailings several thousand times in excess that which is allowed by federal mining regulations.

Mining operations and dumping of tailings into Alice Arm began early April.

"We believe the facts indicate that Amax Canada has acted in a responsible manner," said Mr. Gousseland.

Article courtesy of Canadian Churchman.

Canadian Churchman, Vol. 107, No. 6, June 1981, p.1

Rules made to be broken, says fisheries minister

By Margaret Munro

(Southam News)

OTTAWA — Fisheries Minister Romeo LeBlanc said Thursday there is nothing unusual about the tailor-made permit that allows a B.C. company to grossly exceed federal guidelines for dumping toxic mine tailings into the ocean.

The rules, he says, were made to be broken.

Appearing before a parliamentary committee, LeBlanc, flanked by his lawyers, said he won't release the 212 documents relating to the permit granted Amax Inc. on the eve of the 1979 federal election.

The permit allows Amax to exceed federal regulations for mining effluent by 8,000 times. LeBlanc and his lawyers say that's irrelevant because they have exempted the operation from the regulations.

Flying in the face of a leaked memo that clearly shows many top federal officials opposed the permit, the minister said the unique setting of the mine — on the edge of deep fiord in northwestern B.C. — makes such levels of toxic effluent acceptable to the government.

LeBlanc said the law clearly permits the fisheries minister to exempt certain operations from regulations governing the dumping of mine tailings, a comment that prompted New Democrat MP Jim Fulton to ask if the regulations

saying they would prove both useful to the committee and embarrassing to the Liberals.

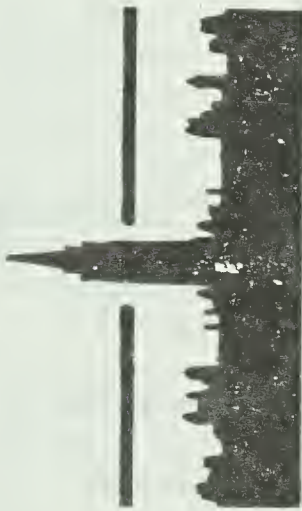
He is also pushing to have Ontario Lt.-Gov. John Aird testify before the committee. Aird is an ex-director of Amax, a former Liberal senator and former chief fundraiser for the federal Liberals.

Meanwhile, Amax continues to operate with the permit that says 12,000 tonnes of granular tailings can be dumped into the spectacular Alice Arm fiord over the next 26 years. Fulton charges that the company is already violating the permit in the sense that the discharge is not staying 50 metres below the water surface as was ordered.

The tailings, a byproduct of the molybdenum mine, contain arsenic, radium-226, cadmium, copper, lead and zinc. The 100 groups opposing the dumping say it will seriously harm the area which has traditionally been fished by the Nishga Indians who were not consulted before the permit was issued.

LeBlanc conceded that "in hindsight I'd say there should be more public discussions" before such decisions are made.

Fulton says the company would need to spend only two per cent of its return on investment — expected to earn Amax \$1.5 billion over the next 30 years — to dispose of the tailings at a landfill site.



Parliament

were designed to govern "dumping on the moon."

LeBlanc said ministerial discretion also clears the permit-holder of contravening the federal Fisheries Act that states: "No deleterious substances will be discharged in waters inhabited by fish."

LeBlanc's appearance before the joint Commons-Senate committee on regulations and other statutory instruments is the latest step in a three-year war Fulton has been waging against the dumping permit issued Amax that operates in his riding of Skeena.

Fulton has asked the committee to decide whether the way the permit was issued amounts to "unusual and unacceptable use of power" and a breach of "natural justice."

Fulton is calling for the release of the 212 documents the government has on the Amax decision,

Article courtesy of Margaret Munro and Southam News.
The Calgary Herald, April 2, 1982, p.A14.

INQUIRY STEP IV & V	ACTIVITY 19	The Problem Of Overfishing
FOCUS OF INQUIRY: How do we solve the problem of depletion of renewable resources?		
<p>INTENT: Students will understand the concept of overfishing, the nature of the problem in the 1960's, the changes made by the Canadian government to deal with the problem, and the present situation in which new problems have arisen.</p> <p>Students will reinforce certain vocabulary terms related to the concepts, e.g., overfishing, traditional waters, territorial waters, controlled zones, quotas, under-supply, foreign vessels.</p>		

TIME: 80 minutes

RESOURCES: The Technology Connection: The Impact of Technology on Canada, pp. 156, 155-159

Historical Fact Sheet - Review, SR 32, pages 1-3

Historical Fact Sheet - Review, SR 32 Answer Key

Canada: The Land and Its People, pp. 128-131

"Fishermen net more cash and catches", SR 33

"Fishing industry nets a harvest of problems", SR 24 (entire article from Activity 16)

"The big catch", SR 34

"The Myth of the Whale: A Problem of Technology", SR 35

INSTRUCTIONAL SUGGESTIONS:

1. Introduce this activity by presenting the graph on page 156 of The Technology Connection: The Impact of Technology on Canada.
2. Lead students to interpret the graph by asking specific questions:
 - a. Would you say that the volume of catches has been fairly steady over the years? (Give reason for answering yes or no.)
 - b. Is there a year that could be correctly labelled a "peak" year? If so, what year?

- c. Which year saw the lowest catch?
 - d. If the graph were extended to the future is there a year when the fish resources would run out? (Point out that the graph does not start at zero.)
3. Encourage students to speculate as to the factor or factors that may contribute to the changes from year to year. What factors could have caused the increases and decreases in fish catch?
 4. List responses on board.
 5. Discuss responses and come to a general agreement on the most likely answers, e.g., improved technology such as sonar, longer fishing season, smaller mesh nets, bottom fishing, larger ships, more fishing ships involved, etc.
 6. Indicate to the class that they will work in pairs to complete the Historical Fact Sheet - Review, SR 32 using their previous experience, The Technology Connection: The Impact of Technology on Canada, pp. 155-159, Canada: The Land and Its People, pp. 128-131, and some readings.
 7. Distribute copies of the Historical Fact Sheet - Review, SR 32 to students. Answer key is available on page 142.
 8. Ask the students to use the following articles as sources for answering the question section of the fact sheet: "Fishermen net more cash and catches" SR 33, "Fishing industry nets a harvest of problems" SR 24 (from Activity 16), and "The big catch" SR 34.
 9. Allow about $\frac{1}{2}$ hour for work. Students may wish to divide the reading of the material.
 10. Discuss the answers with the class.
 11. Have students hypothesize about how the facts discussed have had an impact on the balance in the industry between the two situations, over-fishing and over-supply.
 12. Hand out to the class or read to them "The Myth of the Whale: A Problem of Technology", SR 35. Explain the term "myth". Discuss with them the similarities between the story and what they have studied so far. You might wish to make a comparison list. Ask whether the ending is possible today. Ask for suggestions as to how it might be avoided.



CHALLENGE ACTIVITY:

The activities of the Greenpeace group may be researched. Their stand on whaling, seal hunting, and nuclear development could be analyzed.

OUTCOMES:

When this activity is through, students should be able to generalize about technology and fishing along these lines:

1. technology brings changes;
2. changes require problem-solving methods;
3. sometimes new problems arise;
4. controls may be part of the solution.

1. FACT:

There has been a 500-year history of many nations fishing the Grand Banks.

QUESTION:

What explorer first reported large amounts of fish in North American coastal waters? _____

2. FACT:

Canada's fishing grounds supply many nations with food.

QUESTION:

Foreign vessels from what countries have been fishing Canadian waters? _____

3. FACT:

Canada's seafoods have become famous the world over.

QUESTION:

Which species of seafood have become famous around the world?

B.C. Salmon _____

Over-Fishing and Control

4. FACT:

In 1977 the 320 km (200 mile) economic zone to protect coastal waters and fisheries was declared.

QUESTION:

What technological changes in fishing methods prompted these changes in Canadian fishing regulations?

- a. _____
b. _____
c. _____

QUESTION:

What were any two of the regulations made at that time?

d. _____

e. _____

5. FACT:

The article "Fishermen net more..." (SR 33) states that Canada's traditional fish stocks have almost recovered and that continued expansion will depend on various factors.

QUESTION:

What will some of these factors be?

6. FACT:

Growth of secondary industries which are fishing-related will increase the amount of work available for Canadian workers.

QUESTION:

Which secondary industries may experience growth?

7. FACT:

Canada needs new markets to expand its fishing industry.

QUESTION:

What countries can we sell to?

8. FACT:

With growth in the east coast fish stocks, there is still some conflict between inshore and offshore fishermen.

QUESTIONS:

a. Which is the largest group - inshore or offshore fisheries?

b. Which group makes the most income?

c. What is the reason for the conflicts?

9. FACT:

In British Columbia, the forest industry and the fishing industry are in conflict.

QUESTION:

What could this conflict be about?

NOTE: The article says that it happened, but does not say why.

10. FACT:

Although the east coast fishing is improving, there are concerns about the west coast salmon.

QUESTION:

What is the government doing to increase the salmon run on the west coast?

11. FACT:

The control of fishing comes under the federal government and most fishing is in British Columbia and the Atlantic provinces.

QUESTION:

Why should you as an Albertan be concerned about the fishing industry?

HISTORICAL FACT SHEET - REVIEW

1. John Cabot
2. Russian, Japanese, Portuguese, French, West German, American and many others
3. B. C. salmon, cod, turbot, lobster, halibut, tuna, Arctic char, herring, roe
4.
 - a. sonar and radar equipment
 - b. use of trawlers from factory ships
 - c. quick-freezing of large catches
 - d. & e. quotas set on size of catch, limit on net sizes (to allow small fish to escape), licences needed by foreign ships, penalties for violations (fines, jail)
5. use of unusual species, new markets, improved quality
6. fishing processing, marketing agencies
7. European Economic Community (Britain, France, West Germany, Denmark, Italy, Greece, etc.), Japan
8.
 - a. inshore fishing (see Across Canada, p. 273)
 - employs 85% of fishermen
 - b. offshore fishing
 - catches 90% of the fish
 - c. inshore fishermen feel that the offshore fishermen will take all the fish
9. the logging industry could pollute the water and disturb fish breeding areas
10. closing some areas to fishing, limiting the number of fishermen, allowing fishing only during certain times, building more fish hatcheries, fertilizing lakes, building more fish ladders so the fish can get upstream.
11. This is a personal answer that depends on a value position; however, the answers could include references to Canadian sovereignty, pride in being Canadian, concern for other Canadians, and knowledge of Canada.

Fishermen net more cash and catches

By Amy Zierler and Catherine Gourley

THE 200-MILE limit for Canadian jurisdiction over fishing rights raised optimism for the future of what has often been a depressed industry. There's little doubt the optimism is justified but the 1980s will not be clear sailing through the shoals of a quicksilver international market and inter-governmental wrangling.

While Canada's East Coast fishery has rebounded from its collapse early in the 1970s caused by overfishing, there is less optimism about its ability to beat that performance in the decade ahead. Traditional fish stocks have recovered, but for continued expansion the industry will have to turn to more unusual species, new markets and improved quality.

D.A. MacLean, Nova Scotia's deputy Fisheries minister, has been trying to dampen the enthusiasm for relaxing quotas. He warns that traditional stocks have almost totally recovered, meaning there is not much room for expansion. And larger catches of less popular species, such as capelin, could bring other problems because of their importance in the food chain.

Double

The Atlantic Provinces Economic Council predicts normal growth will add 32,000 man-years of employment in fishery and related industries, or about double present levels. Much of that growth, Apcc says, will not be in new jobs but in increased fish processing on shore.

Canadian companies will catch and process significant amounts of squid for the first time this year, challenging in the process Far Eastern operations. Squid is expected to contribute \$1 billion a year by mid-decade.

And with government market-intelligence support, the East Coast industry expects to make major gains in

overseas markets generally. H. B. Nickerson & Sons Ltd. of North Sydney, N.S., for example, recently advertised for a manager for its Far East operations.

The U.S., traditional buyer of most of Canada's fish, is turning toward self-sufficiency, so Canada must look elsewhere. New markets hold the key to the industry's future, industry and government agree.

Article courtesy of the authors,
Amy Zierler and Catherine Gourley
and The Financial Post,
January 5, 1980.

FISHERIES:

The big catch

THE ISSUE: How can our coastal provinces get the most out of Canada's 200-mile offshore fishing limits?

COMMERCIAL FISHING is on the upswing again.

For the third year in a row Canadian fishermen and processors had record earnings in 1978. The total catch last year not only topped 1977 landings but jumped in value by \$168 million. The market value of our fish products in 1978 is estimated at nearly \$1.5 billion.

"It appears 1978 has been a bonanza year for Canadian fishermen," said Fisheries Minister Romeo LeBlanc. He noted that income was generally higher and employment in the fish plants was the steadiest ever.

Last year, too, Canada became the world's largest fish exporter, with value rising to \$1.1 billion, up more than \$300 million from 1977. Donald Tansley, LeBlanc's deputy minister, says, "We have diversified our exports. Three years ago, about two-thirds by value went to the United States; last year, only one half went south and about 20 per cent each to the European Economic Community and to Japan."

The reason for such upbeat action in the industry is that Canada, on January 1, 1977, proclaimed exclusive fishing rights for 200 miles off its shores. For the first time it could control fish stocks within this zone, reserving what it needed for itself and allowing foreign nations to take the surplus. A number of other coastal countries, including the United States, have taken the same step.

In Canada's case, the action came none too soon. In 1974, when Romeo LeBlanc became federal Fisheries Minister, commercial fishing was in sad shape. Foreign fleets off our coasts had just about put our fish stocks past the point of no return, and in that year Canadian fishing companies lost an estimated \$50 million. Since then, restrictions on threatened species and the 200-mile limit have breathed life into the near-corpse of the fishing industry.

NEW LIMIT RAISES PROBLEMS

But, as so often happens, finding an

answer to one thing seems to open up new questions. For instance: There are inshore fisheries and offshore fisheries. Offshore fishermen use larger vessels, stay out for days or weeks at a time, and bring bigger catches to port. Now that Canada controls distant fishing grounds there is pressure from the industry to build up the offshore fleet rapidly. The inshore fishermen fear that this will reduce the hauls which would otherwise come their way, and LeBlanc seems to side with them. He believes that quick expansion of the offshore effort would cripple the inshore fisheries. We must go slowly, he thinks, until we are sure that the deep-sea population is back to normal. "You can't catch the same fish twice" is a favourite fisheries motto.

All the same, this is the biggest debating point in the new fisheries management zone. Biologists just don't know enough about the migrating habits of fish to be able to say what effects catching fish 200 miles out will have close to shore.

Fisheries are renewable resources like forests, crops, and hydro power. They are different from other natural resources, however, because under the BNA Act they are controlled by the federal government rather than by the provinces. Thus, LeBlanc's decisions are very important for Canada's 60,000 fishermen, most of whom work in inshore waters. The minister takes a fatherly approach to the small-boat men, preferring to be known as "Minister of Fishermen" instead of just "Minister of Fisheries."

He feels he must be protective because the fishing industry is made up of individuals and small processing plants rather than of big, well-organized groups. True, there are unions on both coasts, with Newfoundland's Fish Food & Allied Workers Union in the lead. The Newfie union represents 4000 inshore fishermen, 4600 plant workers, and 1000 trawler workers. Most fishermen's groups are too small to deal with big business and big government, but they want to have a say in fishing policy.

The coastal provinces have a better chance to state their case for more power. All of them have their own fisheries departments. LeBlanc wants to charter foreign vessels to harvest fish not caught by Canadians, a cautious approach. He says the industry doesn't make full use of its present fishing fleet. The Atlantic Provinces, in a document presented to Ottawa, urge a tougher policy. They want the government to help replace the aging fleet within the next ten years at an estimated cost of \$900 million. Canada could then really cash in on its 200-mile limit. "Let the feds support us, but let us run our own show," is the provincial position. "After all, God gave us the fish, not Ottawa."

BOUNDARY DISPUTE

Another fishing issue is the Canada-U.S. dispute over boundaries. When the two countries announced 200-mile limits, the Georges Bank, midway between Nova Scotia and Massachusetts and rich in both fish and minerals, became a coveted prize. The boundary line may be argued for years yet, but negotiators have now drawn up a treaty settling fishing rights in the area. If accepted by both sides it will set quotas for catches of cod, haddock, mackerel, and other fish. In Canada, the Cabinet can approve the agreement, but in the U.S., both houses of Congress must ratify (confirm) it. This will likely mean that the powerful New England fishing lobby will put pressure on the politicians to alter the treaty in their favour.

On the West Coast, salmon gives the fish packers their richest cash crop. Canada aims to double the present average yearly catch of 60 million kilos by the 1990s. The first five-year phase of a 15-year program began in 1977. It will include such traditional methods as building hatcheries and artificial fish ladders as well as a more dramatic system of lake enrichment. This involves dropping (from aircraft) common garden fertilizers into selected lakes. The fertilizer stimulates the growth of plankton and increases the food supply for young sock-eye salmon, resulting in bigger fish and a better survival rate.

One possible threat to the salmon fishery is that the fish range far outside the 200-mile limit and may be caught there by Japanese vessels before they return to their coastal spawning grounds. An agreement in which both countries concede certain fishing rights should get around this difficulty.

The expanded fishing zone offers the industry a bright future if it can get its act together. Possibly the small boat, manned by two or three fishermen, is still the most economic unit in terms of investment, as LeBlanc argues. But, at the wholesale and exporting level, many small outfits are competing against each other and against single big exporters from Scandinavia and Western Europe. Lack of cooperation and organization cut efficiency and raise costs of getting the fish to the table.

Commercial fishing, as it is with those who do it for sport, is still a very individualistic pursuit.

SUGGESTED ACTIVITIES:

1. How often do you eat fish? Find out what part of your family food budget is spent on fish. Is fish consumption in your family a question of cost, taste, or habit?
2. Debate the question of whether fisheries should be controlled by the provinces or by the federal government.

Article courtesy of
Canada & the World,
Maclean Hunter Ltd.,
Toronto, May 1979.

The Myth of the Whale: A Problem of Technology

Many years ago, the whole Atlantic seaboard was devoted in one way or another to the wealth that could be obtained from the ocean. Ships crossed the waters and carried cotton to Britain so that clothing could be made in the English Mills. Fishermen went off to the Grand Banks of Newfoundland to catch the cod which were there in abundance. Many people, too, earned a living by hunting the whales which lived in the North Atlantic.

The whalers brought prosperity to themselves and their communities. Industries were established to make the equipment necessary to hunt whales. Shipbuilding was carried on to make certain that there were enough wooden boats to sail in. Sailors were employed in the actual hunt. And, finally, people worked on the shore to transform the carcasses into usable products such as oil.

The problem with the whaling industry was that it did not seem to be efficient. The wooden craft were seaworthy but once they had caught a few whales, they had to return to shore with their catch

because they were not large enough. Moreover, the harpoons that were used to kill the whales had to be thrown by hand. This made it very dangerous for the sailors who had to come very close to the whale in order to throw the harpoon. Thus they were subject to the dangerous tendency of the whales to strike the little boats with their tails and send the men to the bottom of the sea.

It was therefore a great blessing to the whaling industry when improvements were made in the technology of the industry. Metal ships replaced the wooden craft. Such ships were larger and more durable (thus the shipbuilding industry of Nova Scotia was destroyed). Harpoon "guns" replaced the hand thrown spears and thus more whales could be caught (and the harpoon industry was destroyed). Sailors stopped taking their catch back to shore when "factory" ships accompanied the fleet to sea and processed the carcasses right in the middle of the ocean (and thereby destroyed the shoreline industries). At last, the whalers became so skilled at hunting, catching and processing whales that they found they could use more and more machinery and fewer and fewer sailors (thus many men were put out of work). Finally, the whaling industry became so utterly efficient that it caught all the whales. Now there is no more whaling industry at all.

This story, of course, is a myth. Our thanks must go to the anthropologist, Gregory Bateson, who first told it to us and who knows better than any how true the myth is.

Article courtesy of Howard A. Doughty.
From Canadian Studies: Self and Society
by Ian Munro et al. Rexdale, Ontario:
John Wiley & Sons Canada Limited, 1975, p.173.

INQUIRY STEP IV & V	ACTIVITY 20	More Fish
FOCUS OF INQUIRY: How do we build up stocks of renewable resources?		
INTENT: Students will develop an understanding of the feasibility of fish farming and note how the factors of location apply in establishing a fish farm.		

TIME: 40 minutes

RESOURCES: "Operating a fish farm brings entrepreneur success on a plate", SR 36.

"This farmer's business is slippery", SR 37.

INSTRUCTIONAL
SUGGESTIONS:

1. Introduce this lesson by telling students:
Imagine that you are a president of a large fish canning plant. You have known for some time that the supply of fish entering the plant has undergone a gradual decline over the last six years. The company can no longer afford to lose money because of this decrease in supply. What suggestions do you have to overcome this problem?
2. Have students get into small groups to brainstorm ideas.
3. Bring class together and have students list suggestions on the board.

NOTE: Hopefully, students will suggest a solution which reflects the fish farming concept. If not, you may have to introduce this idea. Discuss the feasibility of each suggestion with the class.
4. Distribute copies of SR 36 "Operating a fish farm brings entrepreneur success on a plate". Briefly explain to students that the article is about a businessman who operates a fish farm in Ontario.
5. Have students read the article silently.
6. Discuss major points of the article with the class. Write these on the board and have students copy them in their notebooks. The format may follow the example on the next page.

Fish Farming

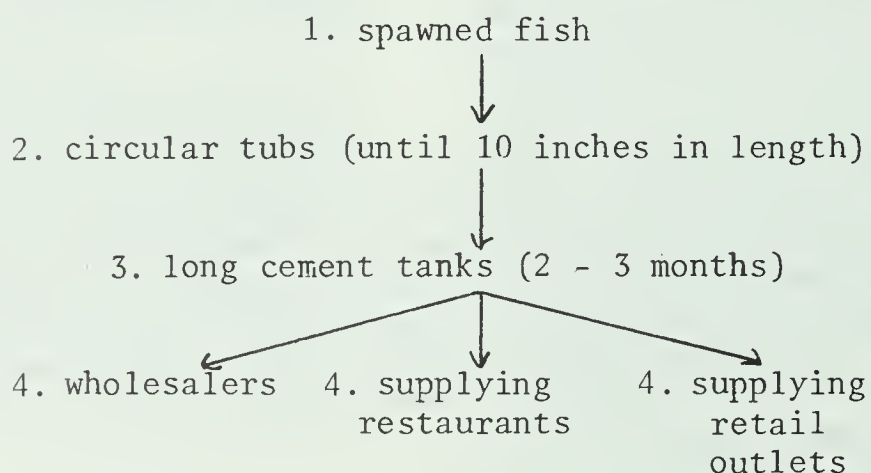
A. Conditions necessary for fish farming

1. water supply
2. back-up electricity system
3. technical equipment - circular tubs
- automatic feeders
- cement tanks
4. fish feed
5. efficient transportation/ refrigeration system

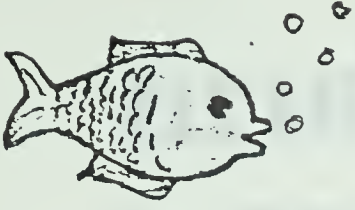
B. Problems with fish farming

1. high risk
2. insurance

C. Steps involved in the operation of a fish farm



7. Ask students if they think fish farming is possible in western Canada. Are there conditions which promote or hinder fish farming in the West?
8. Hand out the article "This farmer's business is slippery" SR 37. Ask students to read it. Have them check their notes on the Ontario fish farm and list similarities between the two operations and their differences.
9. Review the factors of location for fishing (Activity 7). Are they the same for fish farming? Why not? Here the most important factors would be: market, land and services (i.e., water supply), and short haul transportation.
10. Ask students if they think fish farming may become a major industry in the future. Why or why not? Reasons offered should include potential for increasing the food supply and the fact that fish is a renewable resource.



CHALLENGE ACTIVITIES:

- A. Have students investigate the existence of fish farms in western Canada, particularly in Alberta. A field trip could be organized.
- B. Students could interview restaurant owners to see where their trout supply comes from.

OUTCOMES:

At the end of this activity students should be able to:

1. explain the operations involved in a fish farm;
2. defend their position on whether or not fish farming is a feasible industry;
3. reinforce the factors affecting the location of industry.

ACTIVITY 20

Ab Boogerman at his trout farm: 'A young and growing industry.'

Operating a fish farm brings entrepreneur success on a plate

By Mary Stackhouse Hatt

LONDON, Ont.

HOW WOULD SOMEONE who doesn't particularly like fishing — isn't even an avid fish eater — wind up owning and operating a trout farm?

"It's a young and growing industry. That's why I got into it," says Ab Boogerman, owner of the Komoka Trout Farm near here.

Yet there was another factor that persuaded Boogerman, a 28-year-old business graduate, to leave his management position with a large Canadian firm a year ago.

"I had wanted to manage my own business for some time," he explains. "Having worked part-time on a fish farm in the past, I got to know the industry and decided I could make a go of it."

Boogerman says he has sold 40,000-50,000 fish already this year, hopes to sell another 45,000-50,000 by yearend, and plans to increase production to at least 150,000 in 1980. His confidence is fed by government studies that show people now are eating more fish per capita than several years ago; and by restaurateurs who tell him rainbow trout is an increasingly popular dish.

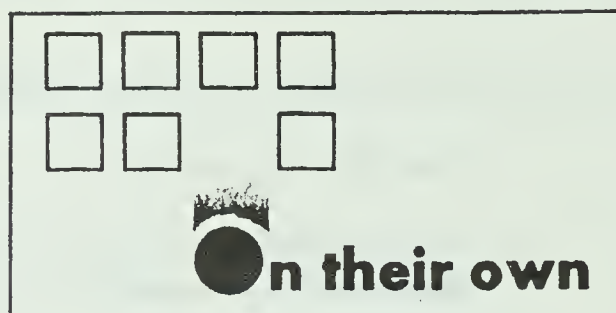
Already, he is a wholesale supplier to restaurants and stores not only in the London, Ont., area but in Windsor, Sudbury and Ottawa, as well. He currently sells 1,000 pieces of fish a week on a wholesale basis, and hopes to increase weekly sales throughout the fall. He says he is selling increasingly to restaurants and established customers are increasing their orders. His immediate aim: to sell 3,000 pieces a week by December.

Freshness

"One of my biggest selling points is freshness," says Boogerman, who packs his trout in ice, rather than freezing them, for transport. The trout are caught in the morning, shipped that day by plane or bus, and arrive at their destination usually in time for a restaurant's dinner hour.

In addition to supplying stores and restaurants, he runs a small retail outlet at the trout farm, and visiting customers may fish for their own trout in his pond. He also stocks other fish ponds.

In the trout season, the farm can hardly be



described as a nine-to-five operation. Boogerman says.

"We're really running around in the summer," Boogerman says. "It's a critical time because the fish are going through a major growth period and need careful attention."

During the slacker winter months, the fish farm requires only one part-time employee in addition to Boogerman and his partners — his brother Ron and fiancée Cathy Cryderman. For the summer rush, they employ three other people.

Boogerman has no insurance but he says his is an insurable industry and he is currently negotiating a policy. Because it is a high-risk business, he has to take extra precautions. For instance, he has installed a back-up electricity system to minimize the threat of an equipment shutdown. Mechanical problems resulting from hydro failure could, he says, cost him everything. Hence the back-up system.

The farm's equipment, which nurtures the trout from the hatching to catchable stages — an average 18-20 months — is technically sophisticated. After the fish are spawned at a small farm in Guelph, Ont. (Boogerman has an interest in this and another small fish-farming operation, in addition to Komoka), they are transferred to the Komoka Trout Farm. There they are housed in circular tubs in a hatchery Boogerman calls the "greenhouse" — which is precisely what it used to be. Water moves through these tubs at the rate of 300 gallons per minute and there are automatic feeders to dispense the fish feed at regular intervals.

Mary Stackhouse Hatt is a freelance writer based in London, Ont.

When the fish reach 10 inches in length, they become "catchables" and are put in long cement tanks, dubbed by Boogerman as the "raceways," where they bask in natural light for another growth period of two to three months.

Boogerman's equipment and supplies represent a sizable investment. Although he leases his property and some of his equipment, he has invested more than \$25,000 of his own money in equipment. And that's on top of the \$40,000 he spent on fish when he started the business. Fish feed is also expensive, at 24¢ per pound — each pound of fish requires two pounds of feed.

Boogerman says sales in 1979, at both wholesale and retail, will total \$130,000-\$150,000 (based on an average wholesale and retail price of \$1.50 per fish). He projects 1980 sales at \$225,000.

His plans to increase production mean adding to his equipment inventory.

"I hope to set up another hatchery, more circulars and additional automatic feeders," he says.

But modern mechanization isn't everything — for Boogerman, new water supplies are one of his greatest necessities. To assure these, Boogerman employs well "witchers" to locate underground streams on his property. To perform this ritual-like process, the witcher, holding two pieces of wire, each about 18 inches long, moves about the property, a wire in each hand. When the wires cross, it is, Boogerman says, usually a sure sign there's an underground stream below.

chemistry

Boogerman is sold on witching. He says it "requires a special body chemistry," and he says it works for him.

"I often give it a go if I happen to be looking at another property as a potential site."

To reduce his fixed costs, Boogerman has recently been exploring a variety of ways to achieve a more viable marketing strategy. In this connection, he contacted a small business consulting service operated by the Business School at the University of Western Ontario and where the annual summer program is partially funded by Ontario's Ministry of Industry & Tourism to provide low-cost consulting to businesses in the London area.

Student consultants Gary Lindsay and Sandy Kemp recommended that Boogerman move more heavily into the wholesaling side of his business where, they estimate, he can sell larger quantities of fish in a shorter period of time.

"Wholesaling is one of Ab's strong points," Lindsay says. "He's cost competitive, and his nearest competitor is 70 miles away in Kitchener."

Kemp adds: "We felt that trying to increase retail sales through a stepped-up advertising campaign, for instance, would not be the best way for Ab to spend his money. With his production increasing, it's going to be important he knows he can sell large amounts — and a wholesale market is more likely to guarantee success."

The consultants have not ruled out retail promotion but they would not make it a top priority. For instance, they suggest Boogerman not increase spending in this area and that he advertise the "catch-your-own" fish feature when trout is in season.

Does Boogerman consider the two-year-old trout farm a successful venture so far?

"I think it's still too early to tell," he says. "The money I make now goes directly into the expansion process. I think it will be another few years before I can really determine my success."

"But what the hell. It's fun."

Article courtesy of author
and The Financial Post.

The Financial Post,
September 15, 1979.

This farmer's business is slippery

ACTIVITY 20

SR 37

Trout grown for market

By Charles Frank

(Herald staff writer)

For Bob Allen, farming is the only way of life — even if it means having to ride herd on 500,000 quick-moving, sometimes ornery and definitely always slippery rainbow trout.

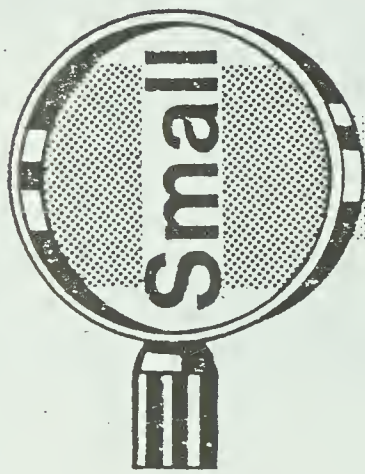
That's right, trout!

Allen, the owner of Trout Springs Ltd., is one of Western Canada's few commercial fish farm operators, an occupation he enjoys immensely but which has proven disastrous for more than a few would-be entrepreneurs.

"I've been at this for more than 20 years — the last six at this location — and I still think it is the best kind of life a fellow can have, but there's a lot more to it than just putting fish in ponds and watching them grow."

At his farm, located on 220 acres just south and west of the Calgary city limits, Allen has been stocking, feeding, and selling as many as 600,000 trout each year to individuals interested in having their own private fishing holes.

And every year he hears about competitors who have started up their own fish farms — only to fade



Business

quickly into bankruptcy when poor planning and a lack of knowledge of the business get the better of them.

"It's like any other business," says Allen with a smile; "you have to know what you are doing and too many people don't understand what it takes to make a fish farm work."

In Allen's case, he suggests experience acquired over the years and an underground stream which funnels more than 5,000 gallons of fresh water per minute into his seven raceways (the ponds which hold the fish) are the keys to continued success.

Article courtesy of The Calgary Herald.
The Calgary Herald, June 15, 1981.

"The stream, which runs between 42 degrees and 58 degrees (Fahrenheit) year-round, is really the most important factor in the operation because it provides the fish with an ideal growth environment," he says.

As well, it allows Allen to run his farm year-round, although he points out that there can be some problems working in water during 30-below-zero weather.

The entrepreneur suggests many fish farms have floundered because of poor water supplies and badly designed ponds which fail to provide the stock with access to sufficient oxygen.

With that in mind, he is considering running liquid oxygen through the raceways next year in an effort to further upgrade the growing conditions for his fish.

Invests \$200,000

Over-all, Allen, who has also been known to race chuckwagons in his spare time, estimates he has invested more than \$200,000 in getting the farm and equipment set up so that everything from feeding the fish to transporting them is done properly.

In particular, he is proud of the "automatic feeding system" developed at the farm which allows the fish to get food when they are hungry and cuts down significantly on cannibalism.

"We're also known for the fact that we can deliver anywhere in Western Canada with virtually no loss in stock, due to the oxygen we pump into our transport tanks."

All of which is essential to maintaining Trout Springs' reputation, he adds.

"We tend to have between 600 and 1,000 customers per year and while about one-third are new, a high portion are repeat customers, who know the service we can provide."

Both repeat and new customers have a choice of fish ranging in size from eight to 12 inches, with about 250 required to stock an average-sized dugout and as many as 1,000 for a larger well-designed private pond.

Allen imports the trout fingerlings which are the basis of his stock from Washington state, but is seriously considering investing an additional \$50,000 to build his own hatchery.

"I think a hatchery here could supply eggs to operators throughout the West as well as provide insurance against the government restricting imports any farther than they already have."

Various attempts to diversify the Trout Springs operation into other lines of fish such as salmon have been stymied by government regulations, and Allen would also like to be able to import bass or catfish from the southern United States.

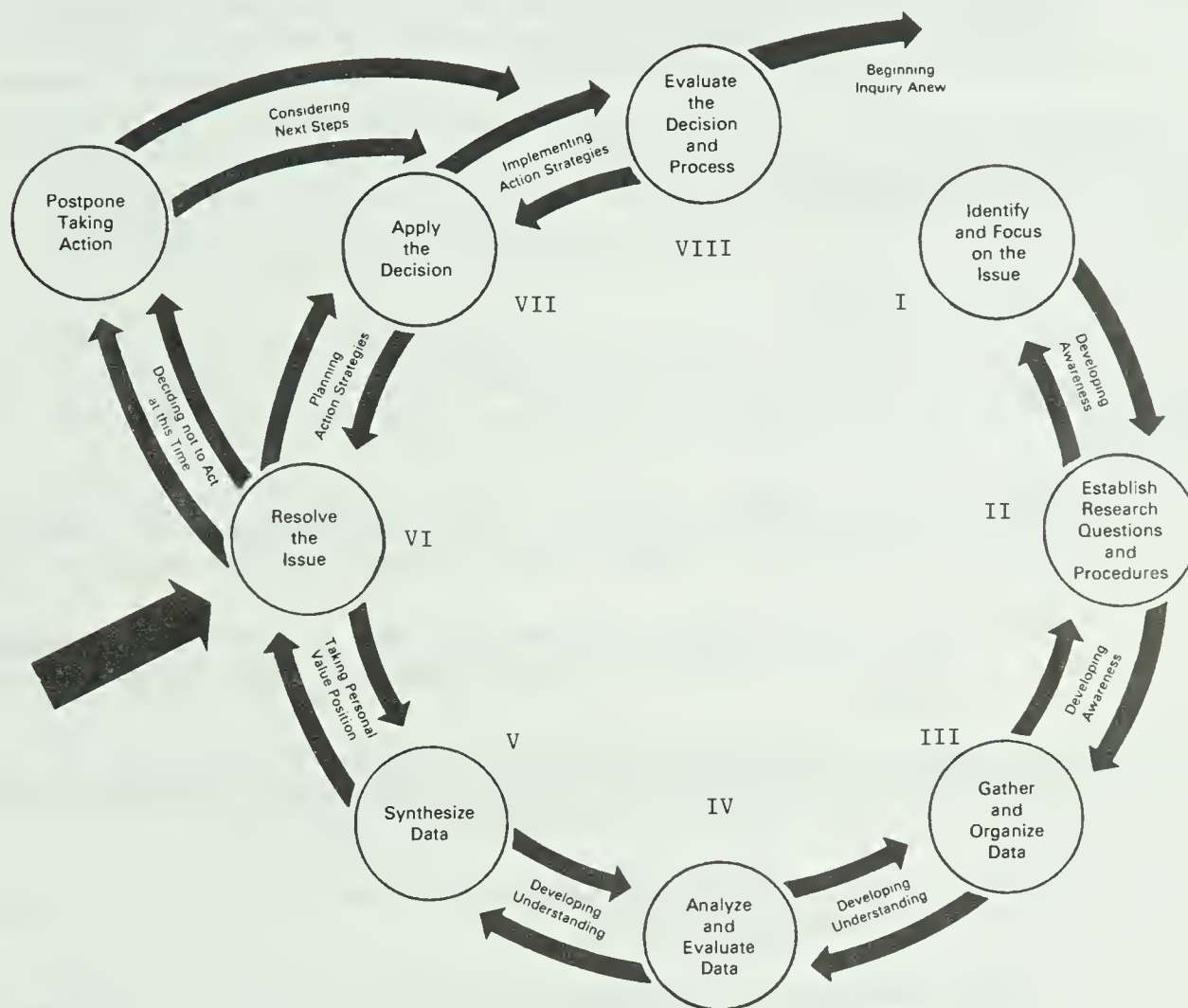
One area where diversification has been possible has been in supplying fresh fish to local fish markets. Next year Allen expects to sell between 100,000 and 200,000 pounds to Calgary and area markets.

"There's one other thing I plan to do as well," says Allen, "and that's build a golf course out here and stock the water hazards with fish."

The chances are that those fish will be home-grown trout.

VI RESOLVE THE ISSUE

HAVE NEW TECHNOLOGIES HELPED OR HARMED THE CANADIAN FISHING INDUSTRY? IS SOME AMOUNT OF CONTROL NECESSARY?



Students examine the present and future impact of technology and consider possible ways of limiting or controlling the effects.

INQUIRY STEP VI	ACTIVITY 21	The Fishing Industry and Technology: A Boon or a Disaster?
FOCUS OF INQUIRY: What has been the effect of technology on the fishing industry?		
INTENT: To enable the students to resolve the issue and synthesize the impact that technology has had on the fishing industry.		

TIME: 40 - 80 minutes

RESOURCES: None required

INSTRUCTIONAL
SUGGESTIONS:

1. Write the major issue from this unit on the board or draw the students' attention to the poster already on the bulletin board.

ISSUE: Have technological advances been a boon or a disaster for the Canadian fishing industry? Should we control them?
2. Ask students to recall the research questions developed in the opener. Discuss some of the suggested solutions.
3. With the class, brainstorm alternative positions on the issue. Possible alternatives include:
 - a. They have been an advantage because they have increased the amount of fish caught.
 - b. They have led to disaster because of the depletion of fish stocks and a change in people's lifestyles for the worse.
 - c. Neither. A balance of advances and control is the ideal.
4. Have the students go into small groups and have each group take one of the alternatives and brainstorm possible consequences for each - both positive and negative. An example follows on page 155.

EXAMPLE:

<u>ALTERNATIVE</u>	<u>CONSEQUENCES</u>	
	<u>Positive</u>	<u>Negative</u>
Yes, we should control technological advances in the fishing industry.	Overfishing would not be a problem. Small fishermen would have a better opportunity. Less costly.	Smaller amount of fish caught. Fishermen would work harder, less leisure time.

5. Once the groups have had an opportunity to gather consequences of the alternatives, have a class discussion of their findings. Discuss each alternative and write the consequences of each on the board. You may wish the students to keep a record of this in their notebooks.
6. Once that has been completed, ask the students to come to a decision individually and write a paper outlining their position on the issue and their reasons for supporting it.

NOTE: You may wish them to make a poster outlining their conclusions.

OUTCOMES:

By the end of this activity students should have made an attempt at resolving the issue of the impact of technology on the fishing industry.

6. "Make The Right Decision"

The issue here is whether to control technology in the fishing industry— that is slow it down not to invest in new projects being made, just like the people in Newfoundland sticking with the old fishing methods, and not ~~to~~ trying new things. The other side is not to control technology but to take everything in, as it comes along— that is letting progress move on and ~~to~~ paying for expensive equipment, and trying new machines. Both of these sides have good arguments.

The position that I took is not really on either side. I said that there should be some control in technology yet we should still advance. To show you why I picked this decision, I will explain the positive and negative sides of each position.

If you said yes there should be control in technology there are many positive things about it. The government and companies would be saving money. There would still be some balance of nature left, which is hard to find these days. The smaller businesses would have a chance to keep up their profits just like the big companies. A good thing would be that the government would still have a great deal of control over the company and its actions. It would be just like in the article "The Problem A Fisher's Story". It says "If we independent fishers can't catch more, we'll

Probably join the other people on unemployment. You can starve trying to catch fish." It also writes that more people fish everyday, but the fish population just keeps getting less and less. Another positive factor would be that they would still be employing people to do the work, instead of machines. The most important positive factor is that there won't be any new problems arising, such as pollution. Take the article "Toxic Sludge in Davy Jones's Locker"—we don't want to have to worry about people polluting our fish supply, It's bad enough as it is.

The negative side for controlling would be that we would still be doing hard manual labour, which is slower than our machines. Big businesses would lose money because they're not catching as much fish. Other countries might get ahead in technology and catch all the fish right ~~from under~~ ^{from under} our noses. Because we're catching smaller amounts of fish the price will be higher.

Now we have heard one side. That dilemma said we should control technology, but this one states that we shouldn't. If we let technology just keep advancing, some good things will happen such as. big businesses would be making bigger profits by

cities." This song is a good example of what the old are left with, the old fishing ways, and the fish just get ~~fewer~~ ^{fewer}. Last of all ~~are~~ the problems with pollution, and factories making these machines which will be dumping wastes.

From all this evidence and facts you can see why I picked that we should have some control. If we don't have any control there's sure to be a fish shortage and many other problems will arise. Then if we do have control, we won't be catching as much fish as is in demand, we will be losing money paying for expensive fish because they can't catch so much. If we have some control we will have an even balance between the two. There should be some control so that we won't make fish an extinct species, but we don't want to be behind in technology. I think we should do whatever benefits mankind but doesn't destroy our natural environment.

Whatever the people of this country do I hope it's for the best, because the world's advancing too fast, and we must watch each step and be very careful, to conserve our resources and animals of this earth.

Clara Ovinger

Catching more fish. The fishermen that work the machines will get good pay, because they need some knowledge ~~of~~ ^{of} how to operate it. There will be fewer hours of work. We would be keeping up with technology all around the world, we won't be losing any advantages in catching the fish. We would be making great profits in selling our new machines to other countries. We would maintain our fish prices because we're catching a lot of fish each day.

This all may sound good but to every issue there is also a negative side. Small businesses would lose a lot of money because only large companies can afford the new equipment, and many smaller companies would shut down. The big businesses would have too much power and once they start being the leader and use these machines and start catching large quantities of fish, they get out of hand, and the fish supply will decline. A very important factor is that there will be more unemployment, just like in "Make and Break Harbour."

It says "Foreign trawlers go by now with long seeing eyes, taking all where we seldom take any, and the young folk don't stay with the fisherman's ways. Long ago we all moved to the

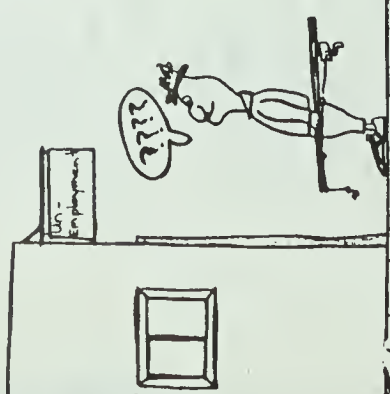
Control

No Control

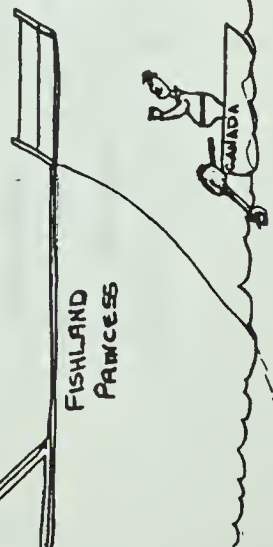
TECHNOLOGICAL ADVANCEMENTS
IF Advanced Technology takes over the Canadian Waters, Fish supply will drop considerably



Advanced Technology will create a problem with old time fishermen losing their jobs as Canadian fishermen



Technological Advancements will tend to make Foreign Fishing Vessels to roam into Canadian Fishing Waters



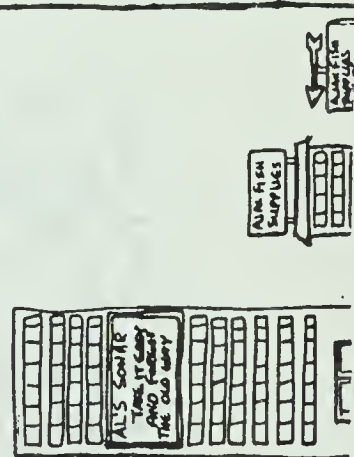
TAKE OVER CANADIAN FISHING
IF the fish supply drops, more fish farms will have to be opened to increase the fish supply



Technological Advancements create to take the old traditional way of fishing from the old time fishermen



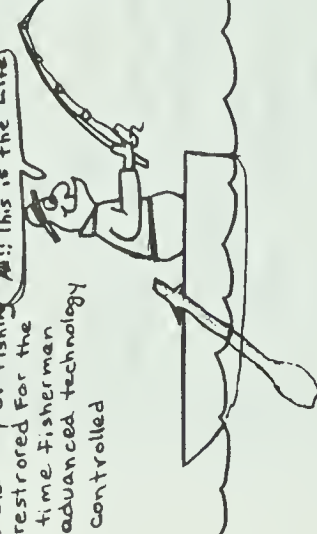
Advanced Technology tends to make bigger Fishing corporations take over the smaller Fishing businesses



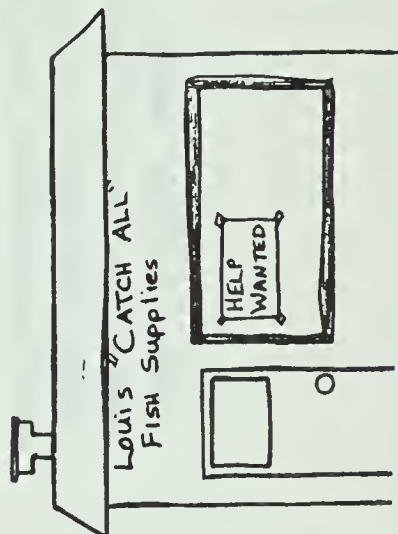
CONTROLLING TECHNOLOGICAL ADVANCEMENTS
IF Technological Advancements are controlled the fish stock in the Canadian waters will increase in supply.



The old way of fishing is restored for the old time fishermen if advanced technology is controlled



IF Technological advancements are controlled job opportunities for old time fishermen are available.



If technology is controlled the danger of the family business being taken over is less.
Well son, you'll be taking the business over soon.



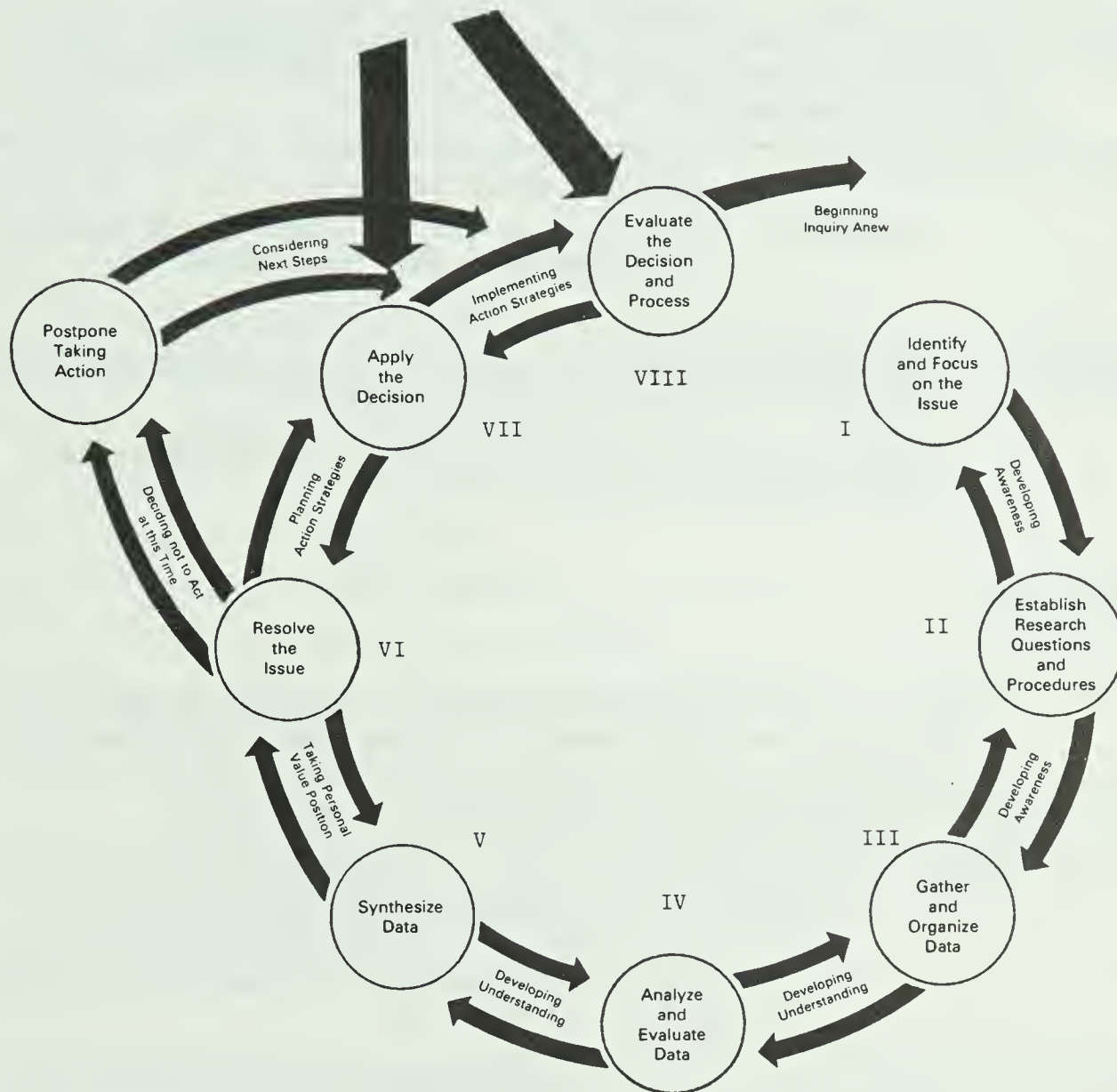
When people have their own family business, they are independent and don't have to depend on government assistance.



To Mrs. Doan
From: Brent Eddy
DEANOT O'CARROLL
Date: March 8/82
T: A: Mr. Smith
Grade: 9-D.

VII & VIII APPLY THE DECISION AND EVALUATE THE DECISION AND THE PROCESS

WHAT CAN I DO TO ENSURE FUTURE SUPPLIES OF FISH?



Through the creation of newspapers, newscasts, or satire in drama and song, students synthesize, apply, and evaluate the decisions they have reached.

INQUIRY STEP VII & VIII	ACTIVITY 22	Points of View - Fishing Industry
FOCUS OF INQUIRY: What can I do about technology and its effects?		
INTENT: Through a variety of creative activities, students will apply their knowledge and conclusions about the Canadian fishing industry.		

TIME: 160 minutes - 80 minutes for preparation; 80 minutes for presentation (variable)

RESOURCES: Any resources used in this unit (texts, articles, notes, etc.)

Groups supply any resources needed for own project

INSTRUCTIONAL SUGGESTIONS:

1. Explain to students that they will use past knowledge and conclusions about the Canadian fishing industry to present a variety of creative activities in groups. They have an option to do one of six exercises.
2. NOTE: Each exercise and each variation of it should be written on the top of a blank sheet of paper. Under the activity put numbers of people that can be in each group and how many groups will be allowed to do this exercise, e.g.:

INTERVIEW WITH INSHORE FISHERMEN

1st group

- A.
- B.

2nd group

- A.
- B.

These sheets should be posted around the room so that students may circulate and sign their names under the exercise they want to do.

3. Explain each exercise and its requirements to the students. All exercises should be designed to include past relevant information, and to present a point or points of view relating to the students' conclusions about the Canadian fishing industry.

- Exercise 1 - Newspaper

A group of students will develop a front page of a fictional newspaper which contains:

- mast head (name of newspaper, date, place)
- headlines (appropriate to Canadian fishing industry) together with news stories

- Exercise 2 - Newspaper

A group(s) of students will develop samples of newspaper items which reflect developments, problems, and/or opinions of the Canadian fishing industry. These exercises should include the development of:

- front page headlines with news stories
- editorials
- advertisements
- political cartoons

- Exercise 3 - T.V. News Telecast

A group(s) of students may present a news broadcast which presents relevant issues and developments in the Canadian fishing industry. This may be done with the help of a skit(s) which represents a live presentation(s) of an event(s) included in the newscast.

- Exercise 4 - Interview

A pair(s) of students may be involved in an interview in which one member plays the role of the interviewer while the other plays the role of: an inshore fisherman, an offshore fisherman, a foreign fisherman, a government official (Fisheries Department), a fish packing plant manager, fish farmer, or coast guard captain.

- Exercise 5 - Satirical Skit

A group(s) may present a satirical skit of some event studied in the unit on the Canadian fishing industry.

- Exercise 6 - Other

An exercise of the students' choice but approved by the teacher.

4. After the explanation of each of these exercises is given, allow time (5 - 10 minutes) for students to ask any questions about the exercises.
5. Have students circulate around the room and allow students to sign their names on the exercise sheet of their choice.

OUTCOMES:

Knowledge and conclusions gained in this unit should be reflected in the group presentations.



CHALLENGE ACTIVITY (optional):

Have students debate the issue:

"Resolved that technological developments in the Canadian fishing industry have harmed it irreparably."

The following instructional suggestions for this activity may be used:

In-class Debating

1. Use five judges.
2. Use three-person teams. (If one is absent the day of the debate, the team can carry on.)
3. Students must serve as officials - either as judge, chairperson or timekeeper.
4. Students are to prepare either the negative or the affirmative position. You may have to flip a coin.

Time Factor

1. Constructive speeches: three minutes
2. Discussion (teams can ask questions of each other): ten minutes
3. Break: five minutes
4. Rebuttal: two minutes (one from each side)

Tasks

1st affirmative give need for change	1st negative attack need and defend status quo
2nd affirmative present plan	2nd negative attack plan and defend status quo
3rd affirmative present benefits	3rd negative attack benefits and defend status quo

NOTE: affirmative speakers should also counterattack in their constructive speeches.

HALIFAX EDITORIAL

Halifax, Nova Scotia March 4, 1972

Update - Sonar Development

WASHINGTON DC. - The term sonar is just a short way of saying sound for navigation research which is a detecting device that uses sound which fishermen use to locate fish.

If you were to ask any successful fisherman what he considers the most important and sometimes crucial piece of equipment that he needs, he would most probably say sonar. It is also one of the newest type of technical advanced equipment on the market despite the fact that it was invented during World War II. Back then its main use was to detect enemy submarines, then, after a few years, scientists began to realize its potential to be able to improve the fishing industry. Before we know it, sonar became the hottest piece of machinery on the west coast and east coast of Canada, and all over the world in countries where fishing is also a major industry.

WHAT IS SONAR?

Sonar is a device that uses sound frequencies of 5,000 to 25,000 cycles each second. The signals are generated in a transmitter on the ship, these signals are then sent to a transducer - an antenna-like device in the water under the ship. The transducer changes the electrical signals to sound waves and sends them through

the water. The waves travel outwards until they strike an object or then rebound and go back through to the transducer where it indicates on either a kind of radar screen or a graph that an object has been spotted, and to tell if it's a fish - it should appear as a suspended object in the water.

There are, as yet, two major types of sonar. One is the dial sonar, simple, not very expensive and less accurate. Dial sonar uses a screen which shows a limited area and objects will show as an obscure dot and a "beep" sound will occur to show that an object was spotted.

Second is the recorder sonar. Complexed, compact, expensive and very accurate which is used solely by commercial fishermen. It records on a graph and shows depth, contours of the area, type of ground - sandy, rocky, etc, and shows any object detected.

IMPACT OF SONAR.

Sonar has a tremendous effect on fishing - either as a sport or otherwise, because it locates fish, and allows fishermen to catch greater amounts of fish in a shorter much shorter period of time. This has caused a sudden boom in the fishing industry - making the fishing industry one of the most important and largest in the world today.

Overfishing causing Union Unrest.

ST. JOHN'S - There has been continuous unrest developing among unions of fishermen about problems of overfishing unions such as United Fishermen and Allied Workers Union; Fishermen Association of Newfoundland and Labrador; Newfoundland Fishermen; Food and Allied Workers Union are among the many different unions developed among the Maritime provinces. Unions on the west coast of B.C. have also given numerous complaints about the lack of control over the amount of fish being caught by large companies in both Canada and foreign countries.

There are several other problems or international concern such as:

1. overlapping the U.S. and Canadian fishing boundaries.
2. jurisdiction over the Atlantic, Pacific and Arctic is unclear.
3. problems over the amount of oil in the water.

allowed to pass through Canadian harbours. Canadian environmentalists fear that any serious oil spill from one of the big tankers could severely damage fishing grounds and wild life preserves.

4. the conflict of the provincial fishing zones.

5. finally is the lack of research done to find out more over the unpredictable nature of fish as they swim from one place to another.

All of these problems are putting considerable pressure on the fishing industry and is making business transactions between large corporations difficult because of much risk involved.

However Premier Brian Peckford of Newfoundland has requested for government aid and intervention to enforce rules about overfishing, regulating ships, solving disputes over zones and on down the list.

DISPUTE: Arctic vs. Government

OTTAWA - One of the most important concerns toward the fishing industry is the issue over the development of the Arctic zone. When Canada changed the 22 kilometre fishing limit to 320 kilometres it also included the exclusive Arctic which has tremendous assets as a fishing zone, and as a source of oil.

This is where the dispute occurs. The federal government says that the Arctic zone has potential value as a rich oil producer. If we mine this area it will mean a great advantage for Canada in means of profits and production for Canada's oil business which could also boost Canada's position among other oil-producing countries. Problem is that the government has little jurisdiction over this zone.

On the other hand, the fishing industry does not want to give up this zone for oil exploration because it also has potential as

excellent fishing grounds which would mean profits and expansion for the industry considering its relatively untouched supply.

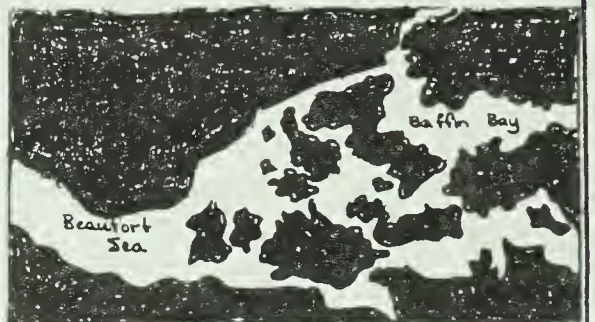
Premier Brian Peckford of Newfoundland said at a news conference Tuesday that a large number of complaints and arguments deal with the pollution that the oil exploration will inevitably drop into the Arctic waters that may do severe damage to the fish supply if it is allowed to progress. He then added that the Arctic is also a very fragile area despite the thick layers of snow and ice. Some areas may not support the steel drilling equipment that will have to be flown up there and just to build this equipment will produce a large hole in every tax payer's pocket. But president Peckford of the Department of Technical Surveys

replied that all precautions will be taken and an intent research of the prospective area will be conveyed before any real plans are made.

Premier Peckford then replied that they do not have jurisdiction over the area, instead it is the property of the Maritimes and of British

Columbia and that they may not give up any of the ownership.

More conferences will be held during the week to try and settle the dispute, but so far the fishermen are winning the battle and the government may have to give up the idea of oil in the Arctic.



Area where the dispute is over is water around the islands from Canada's mainland border to Baffin Bay and Beaufort Sea.

Foreign Vessels in Canadian Waters

HALIFAX - Over the past four years there have been increasing problems over foreign vessels entering Canadian waters without licenses. Just last week coastal guards reported seeing two Russian fishing vessels entering Canada's fishing boundary. They had no license and were let off with a warning and escorted back out. This is not encouraging for the fishing industry.

As it is there are troubles enough trying to control Canadian vessels - checking for licenses, checking to see if they have kept to the limit on net size and giving efficient penalties for violations. There aren't even enough patrol boats and planes to control the number of ships that were issued fishing licenses.

The problem over foreign

ships (from Japan, United States, Russia, West Germany, Portugal, France and Soviet Union) has been, and still is one of many concerns in the Maritimes, but moves to resolve these problems have not been very successful due to lack of real support, co-operation and lack of proper equipment such as sonar and patrol facilities.

One of these moves were taken by the ICNAF (International Commission for the Northwest Atlantic Fisheries) which was an international management organization formed by nations who fish in these waters. The ICNAF has 2 major functions:

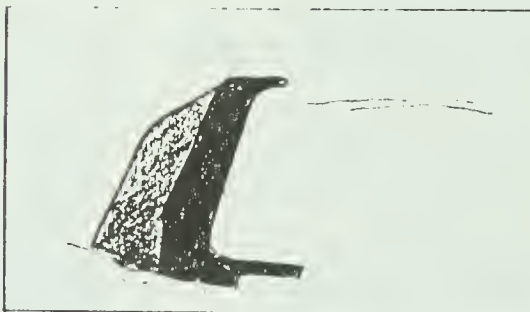
1. control number of fish being caught by both local and foreign ships
2. control the number of ships, including Canadian, in Canada's waters.

Unfortunately it was not successful because they could not control the expansion of fishing fleets

and fisheries.

Fishing is the largest expanding industry in the world that involves every nation in one way or another as either a primary, secondary, or most common tertiary industry. Even as a sport more than 400,000 recreational fishermen can be found in one season alone in Mahone Bay, 80 kilometres from Halifax. This is putting even more pressure on fishermen and increases the importance to keep foreign fleets and Canadian vessels, without licenses, out of Canada's fishing grounds. Even now Canada is only eighth of ten leading countries making it crucial to keep strict laws on fishing and many fishermen hope that expansion will cut down just to reduce risk of overfishing.

Foreign vessels are proof of this because the whole reason for they're entering Canada's fishing zone is to catch some of the still abundant fish that cannot be found in other areas.



Supply ship sinks after collision with fishing vessel.

Disaster in Cabot Strait

CABOT TOWN - Officials report that 67 crew members escaped a sinking supply ship after it collided with a Canadian fishing vessel during last Monday's severe storm. The crew of the second vessel also escaped but the vessel remained afloat due to major damage above ship and only minor below. It seems that radar equipment on board the supply ship had some sort of malfunction but no one noticed because of the attention was mostly

on the storm.

On the fishing vessel radar equipment were working perfectly but it seems their was no one on duty at the time to give an alarm. No blame will be put on either ships but there will be further investigations to find out what the malfunction on the supply ship was and why no one was on duty on the fishing vessel when a storm was in progress. Meanwhile, insurance is covering all damages.

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INQUIRY STEP VII & VIII	ACTIVITY 23	Evaluating The Actions
FOCUS OF INQUIRY: What are the effects of decisions I make?		
INTENT: To synthesize and evaluate the ideas related to technology and change in a Canadian industry that arise from the previous activities.		

TIME: 80 minutes

RESOURCES: None required

INSTRUCTIONAL
SUGGESTIONS:

1. Review the major exercises presented in Activity 22.
State that these have implications for industry in general.
2. Ask students to write a short paper stating a serious problem in Canadian industry and what they personally could do to help solve the problem. (This should be assigned as homework so that the following testing of actions may be done together.)
3. Have the students share their problems and solutions.
4. After the sharing, have the students answer these questions concerning their decision:
 - a. Was my decision the best? Why?
 - b. What might be the reactions of other people to my decision?
 - c. What might be the reactions of authority figures to my decision?
 - d. Why might these reactions occur?
 - e. What might be the positive and/or negative consequences arising from my decision?
 - f. Should any action be taken at all?
 - g. How do I feel about the problem and my decision now?
 - h. Is there anything that needs changing? More data? New plans?
 - i. What could I learn in applying my solution?

5. Following this the class could discuss both their actions and their responses to the questions.

OUTCOMES:

At the conclusion of this activity, students should have made a tentative decision about a solution to a problem in industry and personally evaluated their decision.

EVALUATION

NOTE TO TEACHERS:

The attached evaluation questionnaires will help assess the worth of the teaching units in achieving the goals of the 1981 Alberta Social Studies Curriculum.

Teachers are requested to send the completed questionnaire to the Social Studies Consultants at the Regional Office of Alberta Education in their area.

Regional Offices are located at:

Grande Prairie Regional Office
Alberta Education
10014 - 99 Street
GRANDE PRAIRIE, Alberta
T8V 3N4

Edmonton Regional Office
Alberta Education
10053 - 111 Street
EDMONTON, Alberta
T5K 2H8

Calgary Regional Office
Alberta Education
615 MacLeod Trail S.E.
CALGARY, Alberta
T2G 4T8

Red Deer Regional Office
Alberta Education
4th Floor
Royal Trust Building
4814 Ross Street
RED DEER, Alberta
T4N 1X4

Lethbridge Regional Office
Alberta Education
Provincial Building
200 - 5 Avenue South
LETHBRIDGE, Alberta
T1J 4C7

TEACHING UNIT EVALUATION BY TEACHERS

Part I: Identification Data

Title of Teaching Unit _____

Date of Evaluation _____

Part II: Overall Evaluation of the Teaching Unit

A. Format, Process

For items 1 - 6, please rate the unit in terms of the following aspects, by circling the appropriate number on the right.

(poor) 1 2 3 4 5 (excellent)

1. Appropriateness of teaching unit to level and ability of students. 1 2 3 4 5
2. Adequacy of the treatment of subject matter. 1 2 3 4 5
3. Integration of prescribed resources with print materials. 1 2 3 4 5
4. Variety of teaching/learning activities. 1 2 3 4 5
5. Clarity and suitability of objectives. 1 2 3 4 5
6. Overall evaluation of unit (materials, format and process). 1 2 3 4 5

B. Relationship to Curriculum

Please state your view of the points in items 7 - 10 by circling the appropriate number on the right.

(very little) 1 2 3 4 5 (a great deal)

7. Degree to which a "balance of viewpoint" was presented in the unit. 1 2 3 4 5
8. Extent to which the unit has helped to develop inquiry and participation skills in students. 1 2 3 4 5
9. Extent to which the unit "process of inquiry" (awareness, focus on issue, research, decision, action) provided for a meaningful examination of a social issue. 1 2 3 4 5

10. Extent to which your view towards
an inquiry approach has been made
more positive (through using this
unit).

1 2 3 4 5

C. Written Comments

Please use this section to comment in detail on any points raised in the survey. We would be especially interested in knowing if the unit enabled you to teach the Alberta Social Studies Curriculum more effectively. We would also appreciate your comments if you encountered any problems with the unit.

TEACHING UNIT EVALUATION BY STUDENTS

- A. Instructions: For each of the following, circle the response which best represents your view.

Example:

My view of football (dislike it very much) 1 2 3 4 5 (like it very much)

If you liked it very much, you would circle 5.

If you disliked it very much, you would circle 1.

If you disliked it somewhat more than you liked it, you would circle 2.

1. I would say that this unit was: (hard) 1 2 3 4 5 (easy)
2. This unit was: (very boring) 1 2 3 4 5 (very interesting)
3. This unit: (did not make me think) 1 2 3 4 5 (made me think a lot)
4. This unit was: (too short) 1 2 3 4 5 (too long)
5. In this unit there was: (not enough discussion) 1 2 3 4 5 (too much discussion)
6. In this unit there was: (not enough reading) 1 2 3 4 5 (too much reading)
7. In this unit there was: (not enough group work) 1 2 3 4 5 (too much group work)
8. In this unit I made: (not enough decisions) 1 2 3 4 5 (too many decisions)
9. In this unit I learned: (very little) 1 2 3 4 5 (a great deal)
10. The prescribed resources for this unit were: (poor) 1 2 3 4 5 (excellent)
11. The written materials on this unit were: (poor) 1 2 3 4 5 (excellent)
12. We went through this unit: (too slowly) 1 2 3 4 5 (too quickly)
13. This unit had: (no variety) 1 2 3 4 5 (much variety)

14. This unit made me: (want to forget the topic) 1 2 3 4 5 (want to learn much more about it)
15. Looking back, I would say that I: (did not enjoy the unit at all) 1 2 3 4 5 (enjoyed it a great deal)

B. Please write your views on the following three items in the space provided.

1. What I liked most about this unit was:

2. What I liked least about this unit was:

3. The changes I would make in this unit are:

* 000021970421 *

REC-115 MAR 15 '00

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